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Fifty-Cent Rubber Again?

FOR one reason or another, possibly for a variety of reasons, 50-cent rubber is in sight. Indeed, viewing the reduced stocks and constantly increasing consumption, the price named would seem to be imminent. The advance will as a matter of course be laid to the Stevenson restriction plan by some, to the law of supply and demand by others; while crêpe sole propaganda, rubber corsets, and other novelties, will come in for their trace of blame or praise, as the shoe pinches or fits. It is really a pity that Vianna or Charles R. Flint are not now in rubber, that the cry of "corner" can not be raised.

The silver lining to the cloud is seen not only by rubber planters, but just as gratefully by rubber reclaimers. For too long a time have they been keeping their plants going with a production less than normal. With great wisdom they have cut down operating expenses, increased the value of their products and laid in stores of scrap. They will soon reap their reward and, incidentally, again come to the help of the rubber manufacturer.

With the increase in price will also come a renewed activity in the production of wild rubber. The factors at Pará, Manaos and Bahia will ship in greater quantity; the better grades of Africans will again find a market, and Centrals and Guayule will be more eagerly sought. An increase in planting is also likely to follow, not only in the Far East, but perhaps in the Americas. The reports of the American Commission, ignored while rubber was low, will be eagerly scanned now that prices have advanced. The report that Brazil will encourage Chinese coolie labor, and assist rubber planters may materialize into fact. The United Fruit Co., that once under the enterprising Keiths planned Castilloa plantations in Porto Rico, may plant Hevea in some of their rich Central American possessions. Henry Ford may spring a surprise in the way of rubber production in the Everglades of Florida, and as is always possible in things that have to do with rubber, some hitherto unthought-of source may come into being. Or may not laboratory rubber again attract chemist and manufacturer? Perhaps the chemists might point a way for the harassed bootlegger to produce synthetic rubber instead of synthetic gin.

The main thing needed is isoprene, which is not hard to make. Potato or other starch is converted into maltose; yeast ferments it, yielding an alcoholic solution. Methyl alcohol is distilled off and amyl alcohol (substantially fusel oil) recovered as a by-product. The fusel oil treated with chlorine affords isoprene. The latter heated with sodium polymerizes into rubber.

At all events, the rubber supply will continue as in the past, too much for a time, too little for a space, for years to come.

Hard Rubber Coins Once More

As we have mentioned before, the often-recurring newspaper paragraphs as to the use of hard rubber coins in Guatemala have been contradicted by an official communication from Guatemala City. Following this comes a communication from the kindly pen of that crude rubber veteran and expert, Arthur W. Stedman, in which he recalls the use of what he took to be hard rubber money throughout the Southern States back in 1875. His recollection is that because of the scarcity of small change,

five and ten cent pieces of hard rubber were circulated by the Bradley Fertilizer Co. for their great force of laborers. Hardly are we convinced when comes a correction from Peter B. Bradley, head of the great corporation in question which states that the coins that felt and looked like hard rubber were, as a matter of fact, stamped out of sheet metal.

While thus reconvinced there arrives a third letter from A. K. White of the United Oil & Natural Gas products corporation who says: "During the war, while employed by one of the largest rubber companies we made up considerable hard rubber sheet which, to our understanding, was exported to South America and used at one of the mines as hard rubber tokens. These sheets were made up in various color combinations. The center was black and on the outside there were combinations of blue, red, green or yellow. The total thickness of a sheet was about 1/16 of an inch. At the factory we had some samples of small round disks which had been stamped out from sheets similar to the ones that we made. The sheets that we made up were not stamped at our plant but were shipped direct to New York and exported as sheet by the export department of the rubber company."

So from Guatemala to the Carolinas, and thence to South America, progresses the search for hard rubber coins. We are convinced that Guatemala saw them not, opine that what lingers in Mr. Stedman's memory may have been poker chips, which after all, are coins, but feel that the clue that comes from Mr. White will lead to the actual discovery of such coinage.

Successful Rubber Expositions

IF England can have successful rubber expositions why cannot the United States, the greatest rubber consuming country in the world, have them just as good or better? The reply that American rubber manufacturers do not believe that they would profit adequately by thus exhibiting their goods is not sufficient. It is a matter of history that neither the manufacturers nor the Rubber Association looked with favor upon the 1912 Exposition, yet it was a success. The reason for that and for the notable successes of the London shows lay entirely outside of the field of manufactured goods. It was the desire of the crude and plantation rubber producers to show their wares to manufacturers. To this end they bought acres of space, assembled tons of crêpe, sheet, ball and slab, confident that even if the manufacturers did not exhibit they would attend. This they did and America learned in a few weeks more about crude rubber, and especially plantation rubber, than could otherwise have been learned in years. It is true that a few of the large and progressive concerns found little that they did not already know in the exhibits, but for the rest, the majority, an education in plantation sorts and possibilities was there for the price of admission, which they paid many times.

Plantation rubber was then a novelty, and the price was high. Planters were willing and able to spend much money to display their wares, and their governments were glad to assist them. Then too the wild rubber producing countries, as Brazil, felt that they could not afford to be out of it, so their governments installed great and expensive exhibits. Moreover the late Staines Manders was one who had the ear of the planting associations and of the foremost planters and the officials in the wild rubber countries to such an extent that they followed his lead to a remarkable degree. In his line as Industrial Showman he showed the genius of a Barnum, together with a rare talent as an organizer.

The conditions today are radically different. There is nothing new in plantation rubber. The planting industry has no money to spend in showing goods already well known. The wild rubber countries are in even more hopeless case. In a word, there is no crying need either from a rubber manufacturing or planters' standpoint for present exploitation. This is why so little interest is taken in the proposed Boston show for 1925. It does not in any way reflect upon the capabilities or sincerity of the excellent gentlemen who sponsor it; there is no feeling against Boston as its habitation; the general opinion is, however, that its necessity from a trade standpoint is far from apparent.

THE REMARKABLE RESONANCE OF OLD AMATI, GUARneri, and Stradivari violins is said by Dr. Ditmar, of Berlin, to be due to treating the wood with a rubber solution before varnishing. If such sonority and refinement in tone can be thus imparted to the first instrument of the orchestra, it would seem that wooden radio loud speakers and phonograph sound boxes might have their vibrant quality likewise markedly enhanced by merely impregnating them with rubber latex or with rubber solution.

ISOPRENE (C_5H_8), WHICH MIGHT BE TERMED RUBBER'S half brother, can be distilled from turpentine ($C_{10}H_{16}$), and resolved into another isomer, caoutchouc ($C_{10}H_{16}$), i. e., have its carbon and hydrogen elements proportionately increased and its molecular weight doubled, or polymerized, by oxygenating it at a low temperature and then heating it until it becomes virtually rubber. A more costly process is that of chemically combining acetone and acetylene gas, as was done in Germany during the late war.

A BALLOON TIRE OWNER IS ENVIED NOW, BUT TWENTYfive years ago he was ridiculed; for in the early '90's the term "balloon" was applied derisively to a new-fangled pneumatic bicycle tire, which, unlike the old solids, had to be blown up like a balloon.

. . . . . FOR WITH THE SAME MEASURE THAT YE METE withal it shall be measured to you again.—Luke, 6:38.

Water Cure of Inner Tubes[1]

Traditional Limitation of Water Cure to Thread Sheets and Hard Rubber—The Laursen Process for Curing Inner Tubes—Molded Bevel Tube Ends—Water Curing Heaters—Economy and Advantages of Water Vulcanization

THE vulcanization of rubber in hot water is nearly as old as the rubber industry. Hitherto it has been used only for a few special products, principally for thread sheet in soft rubber and for combs, etc., in hard rubber. The method is still in use for these products because of the advantages it affords by applying the curing heat uniformly at the desired rate. It would be quite impractical to vulcanize thread sheet yardage satisfactorily without the water cure.

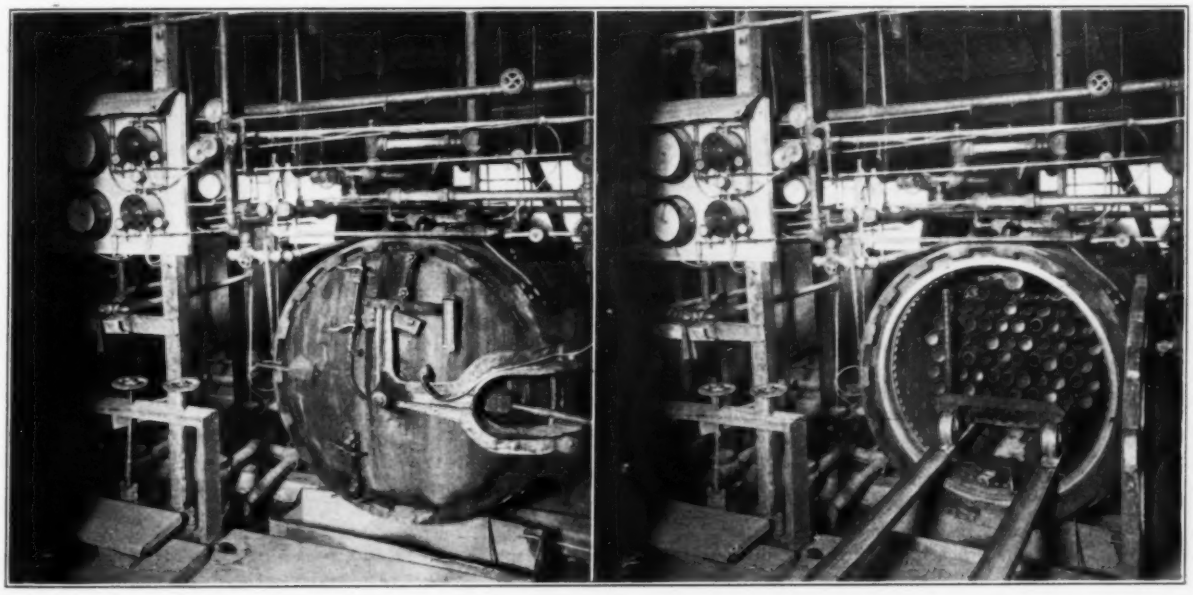
The Laursen Process

For decades the water cure method has been thought of as a special one of limited application as compared with steam vulcanization methods which are more generally useful and require, as a rule, less expensive heaters. The success with which the water cure has been developed for vulcanizing inner tubes has led to its being considered as practically a new discovery. This development took place at the plant of the Gillette Rubber Co., Eau Claire, Wisconsin, under the direction of Laurits A. Laursen, an expert hydraulic engineer and inventor, who began his experiments at the Gillette plant in November, 1922. The details of apparatus and its operation were rapidly perfected and a few weeks later, in February, 1923, the first inner tubes were cured under water after the Laursen method. Since July, 1923, the Gillette company has practiced this process, to the exclusion of the ordinary steam cure, for the manufacture of their daily output of 6,000 tubes. The process has secured the interest and approval of the technical staffs of several prominent tire companies, particularly in the Akron district and will probably come into extended use in the near future. Installation of the apparatus required is considerable but this is offset by economies and superiority of qualities in the product.

Inner Tube Making

The inner tubes for the water cure process are made of the usual stocks in the regular manner, either by rolling up calendered gum sheet on straight mandrels or by extruding the rubber in form from a tubing machine and poling it. At this point it has been customary to spirally wrap the tube to the pole with a cloth strip before passing it on for steam vulcanizing. In the water cure method this wrapping is omitted as unnecessary.

All tubes require to be skived at the ends to produce a neat, smooth joint when cemented endless. This skiving on steam cured tubes is always done after the cure at the expense of labor and some waste of material. In the case of water cured tubes, however, this cost and waste are eliminated by the use of a patented idea of Laursen's[2] by which the skiving of the tube to exact length without loss of material is effected during the cure.



HEATER CLOSED HEATER OPEN

Heaters Used for Water Curing Inner Tubes by the Laursen Process

The Laursen Tube with Tapered Ends

In Laursen's invention advantage is taken of the fact that during the period of vulcanization the rubber first becomes soft and plastic so that it will readily assume any shape, and the rubber is held in a close engagement with the mandrel so that the portion of the rubber in contact with the mandrel will be perfectly smooth and free from blemishes. When the tube is stripped from the

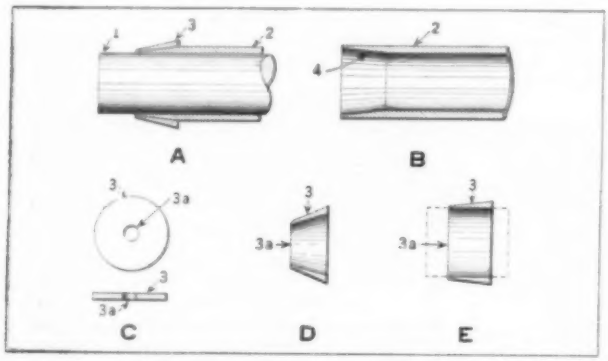
[1]Data and illustrations supplied by Gillette Rubber Co., Eau Claire, Wis.

[2]United States patent No. 1,530,128, March 17, 1925.

mandrel it is turned inside out so that the smooth side is outermost and is the side seen by the user of the tube.

Referring to figures A, B, C, D, and E, in the accompanying illustration, a constrictive ring (3) is applied to the end of the uncured rubber (2) after it has been placed on the mandrel (1). The ring (3) has a width corresponding to the length of the desired taper to be formed upon the end of the tube and the constrictive pressure of the ring against the tube increases gradually from one end of the ring to its opposite end. The end exerting the greatest constrictive pressure is in contact with the extremity of the uncured tube, while the other end exerts little or no pressure. The ring is applied to the mandrel and tube before the tube is vulcanized, engaging it as shown in A. When the rubber is softened during vulcanization the end of the tube is shaped or molded to provide a beveled end.

After vulcanization the constrictive ring (3) is removed and the tube stripped from the mandrel, being turned inside out in the process so that the beveled end (4) comes on the inside as shown



Laursen's Beveled End Inner Tube

in B. The ring or band (3) is normally a flat circle with central hole (3a) seen in plan and section in C. The central opening is comparatively small and the outer diameter the same as the outer diameter of the mandrel. The ring in partially stretched condition preparatory to applying it to the mandrel is shown at D.

When fully stretched and applied to the mandrel as shown at E the opening (3a) is enlarged to same size as the outer circumference of the ring and the rubber around the opening (3a) is under strong tension, while at the opposite end the ring is practically under no tension. The graduated pressure of the constrictive ring acts as soon as the rubber is softened by the heat to mold the ends of the inner tube and produce the desired beveled formation.

Water Curing Inner Tubes

Mounted on mandrels as described the soapstoned tubes are racked on the usual heater truck and run into a double jacketed vulcanizer for cure. The steam jacket is necessary to maintain the temperature of the pre-heated curing water with which the interior is entirely filled, submerging the tubes. The exterior arrangement of the heater with its piping, control and recording apparatus is shown in the principal illustration. From beginning to end of the curing period forced circulation of the hot water is maintained to secure uniformity of vulcanization. At the end of the cure the water is discharged from the heater into a second one loaded with tubes ready for vulcanizing, or it may be transferred to a storage tank and held there under temperature and pressure, to be returned later to the vulcanizer. The large body of curing water is thus transferred in about one and a half minutes without the slightest hammering. After removal of the water from the vulcanizer the poles are removed and the tubes stripped from them.

Economical Advantages

This method of curing inner tubes requires about 25 per cent less time than with steam at the same temperature, due to the more efficient circulation of the water than the steam. Many more poles can be placed in the heater on account of the forced circulation of the water. While the vulcanizer and equipment are somewhat elaborate and expensive the cost is offset by its increase of efficiency over the same size steam vulcanizer unit. There is the further advantage that the water cure process is very flexible inasmuch as any desired temperature may be had regardless of the pressure which is applied to the gum stock.

Summarizing the advantages secured by the development of this curing process, wrapping and unwrapping of the tubes have been eliminated and the cost of wrappers saved. A simple and perfect skive is effected during the cure. The tubes are of exact length when placed on the mandrels, saving labor and waste of cutting. Seconds are reduced to minimum. Mandrels remain clean on account of absorption of ingredients which dry on them when steam is used for vulcanizing.

The practical advantages and economy demonstrated by this application of the water cure method is stimulating interest in extending its use in other lines of rubber goods vulcanization.

Customs Appraisers' Decisions

Protests 28948-G, etc., against the assessment of duty by the collector of customs at the port of New York. (T. D. 40724—G. A. 8948). American Shipping Co. vs. United States. United States General Appraisers, New York, March 7, 1925. Bladders for footballs and basket ball, imported with the leather cases or covers, are properly dutiable with the leather cases or covers as entireties, viz, under the provision for "footballs, * * * and all other balls" in paragraph 1402, act of 1922, at 30 per cent ad valorem, rather than according to their component material of chief value as manufactures of India Rubber or gutta percha, at 25 per cent ad valorem under paragraph 1439 of said act.

In view of paragraph 1402 this merchandise must be assessed as an entirety. These bladders were correctly classified by the collector with the leather cases or covers as entireties, namely as footballs and basket balls. The protests are overruled.—*Treasury Decisions*, Volume 47, No. 12, page 11.

Toys (rubber balls). (T. D. 40734.) United States vs. Stewart Co. No. 2437. Appeal from Board of United States Customs General Appraisers, G. A. 8807 (T. D. 40210). United States Court of Customs Appeals, March 6, 1925.

The official sample of the merchandise is a fancifully colored, hollow rubber ball, about 8 inches in diameter, with two pictures on the outer surface representing children at play. The importation consisted of similar balls varying in diameter from 5 to 8 inches. They were classified by the collector as toys under paragraph 1414 of the tariff act of 1922. Importer claims classification under paragraph 1402 of the act. The government claims that these balls are toys and not used for any outdoor or indoor game or sport, within the meaning of the paragraph. It may be admitted that paragraph 1402, in some aspects, is not easy of interpretation, but having in mind the established rule, that in such cases the taxpayer, and not the government, is entitled to the benefit of the doubt, we think the judgment below ought to be and it is affirmed. —*Treasury Decisions*, Volume 47, No. 12, page 57.

CUBAN PARCEL POST WEIGHT LIMIT INCREASED

According to data supplied by the Chamber of Commerce of the United States, Washington, D. C., Cuban and American postal officials have suggested an increase from four pounds, six ounces, to eleven pounds, in the parcel post weight limit to and from Cuba. If this change is approved by both governments it will become effective July 1, 1925.

The Numerous Uses for Rubber Floors

Increasing Popularity of Rubber Flooring—General Advantages—Particular Applications in the Home and in Business

By Elmer Swanson

RUBBER floors have been on the market for a number of years and today are becoming as popular as mosaic or tile floors. The reasons for this are many. First, the preparation for a rubber floor is cheaper, being unlike that for a glazed tile floor, which requires a concrete base laid between joists and reinforced with wire mesh. This is an extra expense in alteration work, as it is necessary to tear up the old floor and prepare a concrete base, which would cost approximately thirty cents per square foot. The additional glazed tile costing $1.20 to $2.00 per square foot, according to the type of design, will bring the total floor cost to an average of $1.75 per square foot. A glazed tile floor laid on a joist foundation is more likely to crack than when laid on a concrete slab, for the reason that the floor will sag.

The great advantages of a rubber floor are that it is easy to keep clean, soft to walk on, and is warm. A person with rubber heels walking on a rubber floor gets the spring not only from his heels but also from the floor. Another advantage is that it is light in weight and requires no reinforcing of floor joints in private homes. For alteration work it has no equal, being quick to install as very little preparation is needed. It can be installed over glazed tile floors, in iron vaults, on concrete, wood, marble, stone, and various other troweled floors of the hard finished type. In beauty of design it can resemble any of the highest grade marbles. In fact, rubber flooring material has also been used for wainscoting, but in such a case the backing must be perfectly smooth, for every light reflection is seen.

Apart from the many advantages of rubber floors common to their application anywhere, there are numerous special advantages for particular applications which are noted in the following paragraphs.

Show Windows

Rubber floors have no equal when used for display purposes. The parquet floor, so widely used for show windows, is beautiful when new but does not long retain its fresh appearance. If the sun does not check the varnish, the condensed water from the window will turn it black, and it will be only a matter of a few months when this will happen. Rubber flooring in show windows can be designed according to the kind of business to which it is adapted. The window washer does not have to wear padded slippers to prevent shoe nail marks. Water is naturally spilled by window cleaners on the show window floor. This kind of treatment does not injure the rubber floor in the least, but in a year's time a wood floor requires scraping and repolishing again.

Restaurants

Rubber floors rank high for restaurant use, as they are not only easy to walk on, but should a dish accidentally fall it would be less likely to break than on a glazed tile floor. Patrons getting up from their chairs make little noise, such as is commonly caused by dragging chair legs over glazed tile, wood or concrete floors.

On Shipboard

On sea-going vessels where carpets are used throughout they have been a constant expense, for if not flooded with water from port holes broken or left open, the constant walking soon wears them out. In every stateroom, passageway, diningroom, reception room, etc., where carpets are used rubber flooring can be adapted equally well.

When properly laid, rubber floors will contract, expand and bend to all the ship's stresses, which makes them highly desirable for this purpose. The instances where rubber flooring has come up on shipboard have been due not only to omitting to remove paint from under floors, but also to laying the rubber flooring on lithrocite which scales, or on concrete which was not thoroughly dry. On steel vessels as a rule there is a 3-inch concrete slab laid on steel plating. Too great a hurry has been the main fault with most rubber floor installations on ships.

On one of the largest United States passenger ships the rubber flooring installed before the war is still in good condition, but on the upper decks the composition rubber in passageways, reception rooms, diningroom, etc., has caused a great deal of trouble. The workmanship in installing these floors was first class, but dampness in the concrete was evidently the reason for its coming up. The writer suggests that small holes about one-eighth of an inch in diameter and six inches apart be drilled in the steel plating, which would allow the water to seep through when the concrete is poured, yet would hold the concrete in the slab. This would give the concrete a chance to dry, not only from the top but also from the bottom.

Under present methods the steel plating underneath and the rubber flooring on top form an airtight seal. The moisture which is left in the concrete ferments; naturally one side must give, and unfortunately it is the rubber cement, thus causing the rubber tile to come up. This follows the example of filling a tin pail half full of wet concrete and also a wooden box. The concrete in the box will dry out three times faster than in the pail because moisture seeps through the wood, but in the pail the concrete must dry out from the top. The same principle applies to concrete on ships and to concrete forms on buildings, it being desirable to take the forms off to let the concrete dry from underneath as well, which ordinarily requires twenty-five days to dry thoroughly.

When rubber is laid on wood planking, felt paper and cloth should be used and the decking should not have other than cotton, oakum and marine cement between for caulking. When pitch is used and the vessel is in southern waters where the temperature is high the pitch gets warm, softens and oozes up, pushing up the floor, then cools and stays there, causing a ridge in the floor. Pitch coming up between the planking seams is the cause of most rubber floor repairing on wood, or in some cases where cloth and paper are not used, dampness is the most frequent cause in cases where the rubber is laid on concrete.

In the Home

For service and beauty nothing can equal rubber floors for residential use. It is less tiring than other floors for the woman who must be on her feet most of the day. The yearly expense of revarnishing is also done away with. The use of rubber floors in the home covers a large field, as they serve equally well for the kitchen, pantry, butler's pantry, halls, closets, laundry, billiard room, flower room, sun porch, stairs, bathrooms, gymnasium, etc., in fact, almost every room in the house. In apartment houses where there is no deadening felt between the floors, rubber floors will do away with the sound of footsteps of overhead tenants.

Theaters

An attractive and durable floor is a thing that has long baffled theater owners. Carpets of good grade average to cost $4 per

(1) COURT ROOM (2) SALES ROOM (3) STORE (4) OFFICE (9) KITCHEN, INSTALLED BY STEDMAN PRODUCTS CO.
(5) RESTAURANT (6) CLUB (7) RUBBER FLOORING AND WAINSCOAT (11) BANK (12) OFFICE, INSTALLED BY UNITED STATES RUBBER CO.
(8) BILLIARD ROOM, INSTALLED BY MANHATTAN RUBBER MANUFACTURING CO.
(10) APARTMENT, INSTALLED BY WRIGHT RUBBER PRODUCTS CO.

square yard installed. They have an average life of only two or three years and are not only unsanitary but unsightly if chewing gum is stamped into them, as is often the case. It is nearly impossible to remove gum without injuring the carpet; also tar brought in from the street as from creosote blocks where pitch is still in evidence, which is a daily occurrence in hot weather.

Rubber flooring used in theaters is sanitary, neat in appearance, easy to clean, soft and quiet under foot. It is far more durable, lasting four times longer than carpets. This is also true of churches, hospitals, meeting halls, etc.

Business Offices

Rubber in business offices is the ideal floor. Again, there are no moths to worry about should the office desk be on a base and there is no chance to sweep underneath, as with carpets. The writer has seen a $500 rug ruined by just such an incident, the moths having eaten large patches and leaving only the bare fiber.

Banks

Rubber floors in banks have been on the steady increase for some time, not only in the lobby but behind the counters in different cages and bookkeeping departments, also the safety deposit vaults. The hustle and bustle of business is not only quieted by rubber floors, but bank employes go home from work less tired than if they had been standing on wood or hard tile floors all day.

Elevators

The hardest test to which any kind of floor can be put is in elevators, where the traffic is continuous all day. Cork, linoleum and wood have all been worn through, but rubber floors will outlast them all, looking just as neat as when first installed until worn through.

Stores

In stores rubber also surpasses all other floors. Store entries can be worked out with great beauty, including the name of the firm in fancy or block letters, or some beautiful design to attract the attention of passing shoppers. The large department stores on Fifth Avenue, New York, are now installing rubber floors instead of carpets as their combined beauty and economy constitute a great advantage.

February Production, Inventory and Shipments of Tires—Crude Rubber and Fabric Consumption

The outstanding feature of the February tire industry, as indicated by the statistical bulletin service* of the Rubber Association, is in general a decline in shipments of high pressure tires and tubes, as compared with the month preceding, and a corresponding increase in inventories. For example, the total shipments of cord tires in January of the present year stood at 1,618,169, the amount falling in February to 1,458,136 casings. Inventories on the other hand increased from 3,562,701 casings in January to 4,108,082 for February, while a similar decline in shipments and advance in inventory is noted for fabric tires. There is a considerable improvement, however, in the demand for solid and cushion tires, shipments increasing from 44,814 in January to 55,646 in February, while the inventory for these two months declined from 196,774 to 191,733.

A remarkable advance, however, appears for 1925 in the figures for balloon casings, shipments rising from 453,296 in December, 1924, to 563,315 and 764,874, respectively, for the first two months of the present year. The inventory has correspondingly declined from 901,031 in January to 877,851 for February, while production has risen from 468,610 in December, 1924, to a total for January and February, 1925, of 546,146 and 740,106, respectively. Shipments of balloon inner tubes represent a similarly encouraging trend, the figures being: December, 1924, 427,111 tubes; January, 1925, 538,533; and February, 738,734. Production has also gone steadily forward, with the following as totals: December, 1924, 444,794 tubes; January, 1925, 585,243; and February, 776,855. Inventory figures are not, however, as favorable as for balloon casings, there being a continued increase during the three months in question instead of a decrease. In general, however, statistics for both balloon casings and tubes represent a constantly developing market. Compilations as recorded for the twelve months from March, 1924, through February, 1925, show an advance in shipments of balloon casings from 141,272 to 764,874, while corresponding shipments of balloon inner tubes rose from 87,733 to 738,734.

During January, 1925, the rubber manufacturers used in their production of casings, tubes, and solid and cushion tires a total of 12,310,822 pounds of cotton fabric, the corresponding total for February being 13,363,986 pounds. Their consumption of crude rubber for the two months stood at 42,170,869 pounds and 41,720,847 pounds, respectively.

Inventory—Production—Shipments of Pneumatic Casings—Inner Tubes—Solid Tires—Rubber and Fabric Consumption

	High Pressure Pneumatic Casings					
	Cord			Fabric		
1925	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
January	3,562,701	1,999,410	1,618,169	1,498,309	1,009,201	908,260
February	4,108,082	1,996,488	1,458,136	1,710,425	944,168	718,626

	High Pressure Inner Tubes			Balloon Inner Tubes		
1925	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
January	7,756,467	4,171,812	3,643,841	920,728	585,243	538,533
February	8,815,514	3,977,721	2,989,606	951,539	776,855	738,734

	Balloon Casings			Solid and Cushion Tires		
1925	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
January	901,031	546,146	563,315	196,774	52,464	44,814
February	877,851	740,106	764,874	191,733	53,058	55,646

	Cotton and Rubber Consumption in casings, tubes, solid and cushion tires	
1925	Cotton Fabric Pounds	Crude Rubber Pounds
January	12,310,822	42,170,869
February	13,363,986	41,720,847

* All the figures compiled by the Rubber Association represent 75 per cent of the industry.

BELGIAN CONGO RUBBER

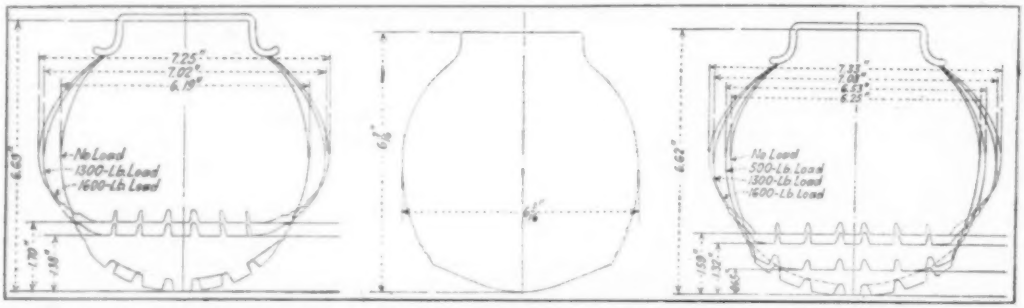
According to figures supplied by the Bunge company, the amount of rubber imported into Antwerp from Belgian Congo, via Matadi and Boma, came to 827 tons, value 8,090,000 francs in 1924. This compares with 641 tons, value 6,327,000 francs in 1923; 1,376 tons, value 3,750,000 francs in 1922; 640 tons, value 1,920,000 francs in 1921 and 1,883 tons, value 10,661,000 francs in 1920.

Advances in Balloon Tire Design—II[1]

A Review of Engineering Development to Date—Tread Profile and Configuration—Sounds and Noises—Standardized Inflation Pressures Needed—Effects of Punctures and Bruises—Loss of Air from Tubes

Tread Profile

TIRE designers have been put to the test to overcome uneven balloon tire tread wear. The solution demanded a thorough study of the complex mechanics of tread movement, and of the wear of a moving resilient material under load distortion. This study, B. J. Lemon[2] asserted, demonstrated that tread pressure, tread movement and resultant wear can be reduced by the natural-wear profile tire, commonly known as the semi-flat tread balloon tire.

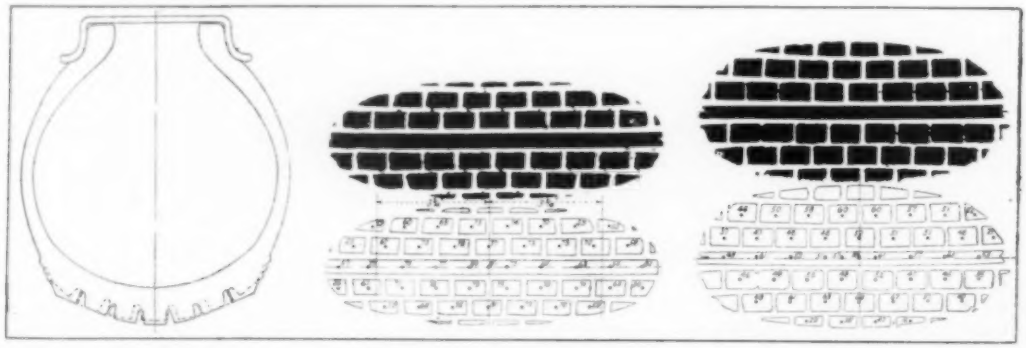


PROFILES OF ROUND-TREAD TIRE UNDER DIFFERENT STATIC LOADS

PROFILE TO WHICH A ROUND-TREAD BALLOON WEARS IN SERVICE

PROFILES OF FLAT-TREAD TIRE UNDER DIFFERENT STATIC LOADS

Surface wear of a tire tread on the road is dependent mainly on tread profile, pressure, movement and materials. Pressure and movement are closely related to profile. Tread materials must be able to resist cutting, wear better than steel and flex over 6,000,000 times in 10,000 miles of service, but balloon tire problems concern the mechanics of the tread rather than its composition.



PROFILES OF FLAT-TREAD AND ROUND-TREAD BALLOON TIRES COMPARED. SOLID LINES FORMER-DOTTED LINES LATTER

TREAD CONTACT AREA AND PRESSURE FOR ROUND-TREAD BALLOON TIRE

TREAD CONTACT AREA AND PRESSURE FOR FLAT-TREAD BALLOON TIRE

Physics teaches that confined gases exert equal pressure in all directions, so that any perfect elastic casing inflated to 30 pounds per square inch and carrying a 1,300-pound load will flatten to a theoretical area of 43 square inches of road surface. A 6.20-inch natural-wear profile tread four-ply Royal Cord balloon tire, for example, covers a gross area of 42 and a net area of 26.3 square inches under the above-named load and inflation. The average road pressure is therefore 50 pounds per square inch. These differences between the theoretical area and the air pressure, 43 square inches at 30 pounds per square inch, and the actual net area and the road pressure, 26.3 square inches at 50 pounds per square inch, amount in part to the load carried by the carcass and not by the air, and indicate the extent of strain concentrated on a certain undefined area of tire tread and carcass mainly adjacent to the region of road contact. The differences also refute assumptions that the pressure inside a tire, and outside on the tread contact area, are approximately the same. The fact is that, with all tires, the carcass walls carry an appreciable portion of the load. For a given tread profile stiffening the tire carcass by additional plies of fabric or boosting the inflation pressure, reduce the area of tire contact with the road and correspondingly increase the load pressure on each square inch of contact area.

Another factor that tends to decrease road area and increase tread pressure is a round-profile tread. Tire casings are cured on a rubber bag so that the inside of the carcass will be curvilinear. This, too, is the shape the tire assumes on inflation. When the tread of a balloon tire has a round profile, the area of road contact is minimized, because the tread farthest from the center line does

[1] Continued from THE INDIA RUBBER WORLD, April 1, 1925, pages 397-99.

[2] Research department, Tire Division, United States Rubber Co., Detroit, Michigan.

not come completely into contact with the road and therefore does not bear its proportionate share of the weight of the tire. The pressure is therefore increased on those tread portions actually in contact. Since rubber is practically incompressible, the loaded tread touching the ground flows or stretches toward any available surface openings. If there are no openings, a wave results, as in a smooth-tread solid tire. As the tire deflects under load, the greatest wear occurs at points of greatest pressure and movement, and that is the cause of irregular wear on balloon tire treads. On front wheels this uneven wear is accentuated on one side of the balloon tire tread when excessive toe-in and pitch are permitted. On rear wheels irregular wear is reduced somewhat because the tire squats appreciably, due to transmittal of the driving force, and thus brings more surface into contact and grips with less movement than in the case of front tires, due to this same power transference.

One remedy for irregular wear on round-profile treads is to use a greater inflation pressure. While this reduces the width of the contact area and increases the tread pressures per square inch, it confines tread movement to an area closer to the tread center line and results in a smaller movement and more even wear. This is analogous to tread wear on high-pressure tires which, from the irregularity standpoint, was never a factor of proportions sufficient to cause worry.

Another method of reducing irregular tread wear is to design the tread so that it conforms to a profile to which the tire wears at its normal load and inflation. The natural-wear profile tread offers several advantages: a greater road contact area, 26.3 square inches against 21.5 square inches, a lower tread pressure, 50 pounds as compared with 60, and a reduced tread movement. Tests extending over a period of six months indicate that the natural-wear profile tread produces longer and more even wear over a larger range of inflations, helps stabilize front-end unbalance, reduces side-sway and strain on bead and rim, and improves forward traction.

J. E. Hale contended that round-tread tires are proving their own case by rendering an unsurpassed degree of all-around satisfaction, whereas experience has taught that the wide flat or shoulder profile has shortcomings that offset the benefits. This refers particularly to the tendency of a shoulder to cause tread separation and premature failure of the cord plies inside the carcass. The shoulder localizes the flexing to such a degree that the so-called flexing breaks are very frequent, particularly when the tires are neglected or abused.

Sidney Schott said he had examined 300 semi-flat tread tires under test, and that in no case had a semi-flat tread tire shown failure due to ply separation at the edges of the tread. Nor has the flat tread tire the tendency to throw stones and to produce clouds of dust that is apparent in a round-tread tire. Referring to a statement that a difference in inflation pressure of 5 pounds per square inch is the margin between success and failure, he believed that the semi-flat tread, which makes this difference unimportant, represents an advance in tire design.

Tread Configuration

Tread configuration, by which is meant some sort of pattern in relief on the tread, is as important to provide traction and prevent skidding in shoeing an automobile as an athlete, said B. J. Lemon. If all roads were hard surfaced, always clean, dry and free from snow, ice and oil, automobiles might run on smooth or ribbed-tread tires. But there are still seven miles of dirt road to every mile of hard surfaced highway, which require a sure grip under ordinary conditions and maximum grip under adverse conditions of sand, mud, snow, ice and oil.

On the other hand, tread configuration can be too rugged. Better roads, the popularity of closed cars and the demand for better riding qualities have eliminated many bumpy treads with large obtruding, widely separated nobs or bars which served their purpose on dirt roads but should now become obsolete.

In the larger section balloon tire sizes, the companies started with an all non-skid design, only to compromise later on a combination rib non-skid design in about equal proportions. The change was brought about by irregular tread wear and vibration that affected riding quality. In the search for a tread pattern to give maximum traction and flexibility in all directions, stability, ease of steering and uniform wear over a reasonable range of inflation pressures, Mr. Lemon came to the conclusion that a non-skid design is needed over more than 50 per cent of the tread contact area. This, he said, was based on comparative traction tests of Royal tread and Royal-Rib tread tires, both inflated to 30 pounds per square inch. The former is built to the natural-wear profile, having one central rib flanked on each side by three rows of sharp-edged blocks, while the latter has three ribs flanked on each side by two rows of blocks.

On dry asphalt and concrete the two treads showed no appreciable differences in traction. However, on wet asphalt the Royal tread showed 15 per cent better traction, and on asphalt covered with two inches of snow 12 per cent better traction than the Royal-Rib tread.

Sounds and Noises

In general, there are two sorts of such sounds, said B. J. Lemon. The first is a true sound caused by the air waves set in motion by the tread configuration and varying in pitch with the size and shape of the non-skid design and with the speed of the car. Except in an exaggerated form, and when in harmony with gear sounds which it then magnifies, tread sound is not disagreeable and is rarely objected to by car owners.

The second sound attributed to or revealed by balloon tires is not a true sound but a grating, grinding noise or roar most noticeable in closed cars when driving over transversely laid brick pavements with worn joint grouting, or on roads surfaced with large size loose gravel. Under such driving conditions the balloon tire is accused of acting like a drum to magnify or focus car mechanism noises or vibrations so that the result appears more noticeable than with high-pressure tires. This quality of producing resonance is traced by some car manufacturers to all makes and types of balloon tires, regardless of tread design, and the smoother the tread the greater the resonance has been reported to be.

Audiometer tests with several four, six and eight-cylinder cars and Detroit motorbuses indicate, Mr. Lemon asserts, that the use of balloon tires does not generally increase noises in closed cars. This does not mean, however, that balloon and high-pressure tires have the same effect on passengers, for vibrations not measured by the audiometer may produce more discomfort than noises. Readings were only slightly higher with closed windows. Engine noises, especially in four-cylinder cars, far exceeded those from other sources, and were materially increased when traveling up grade or in second speed.

W. R. Griswold stated that all tires are selected with considerable reference to their effect in inducing noises in other parts of the car, but that audiometer tests are of little value in proving contentions regarding the noise produced by balloon tires because such tests are based on the relative energy in the sound wave rather than on the psychological value of the sound. One of the most distressing noises, for example, is that of the rear axle gears. This noise has a very small volume but a very penetrating and irritating pitch, yet an audiometer would hardly show it to be of importance.

Mr. Smith, a Firestone engineer, held a different opinion, averring that Firestone experiments over brick pavements showed that the type of profile had very little to do with the volume of noise produced. On pavements with deep spaces between the bricks, he said no tread design seems to eliminate all noise but that a combination of the ribbed and non-skid treads produces the best tire for all-around use. R. K. Jack stated that a ribbed-tread tire causes less rumble inside the car than does a non-skid tread tire,

to which Sidney Schott, a United States engineer, agreed, specifying three plain ribs along the center portion of the tread as a substitution for the true non-skid design. Mr. Lemon took the opposite viewpoint. Mr. Wells remarked that while the plain tread tire is more noisy on brick pavement, on smooth concrete road it does not make the hum produced by a rough tread.

Standardized Inflation Pressures Needed

Because of the low initial pressure, the satisfaction and service rendered by balloon tires is dependent to a greater extent on maintenance of proper inflation pressure than in the case of high-pressure tires. Unfortunately, said B. J. Lemon, the average car owner, with his unlimited capacity for taking things for granted, is already applying to balloon tires his past practice of running high-pressure tires under-inflated. The only remedy for this evil appears to be copious education by the tire manufacturer, but this will be of little avail until balloon tire inflation pressures are standardized. The need is acute and the obstacles by no means insurmountable.

Exhaustive tests on the road and in the laboratory lead to the unmistakable conclusion that a tire will give its best service when run at a specific deflection that results from a definite fixed load and inflation. With high-pressure cord tires that deflection varies with sizes from 9 to 13 per cent; with balloon tires from 18 to 22 per cent. For high-pressure tires there is a standard load and inflation table that is generally approved and recommended by all tire companies. There is no such table for balloon tires.

In many tables the greatest average variance for any load does not exceed 2 pounds per square inch inflation, which is less than the small differences in carrying capacity of some makes of tires. With easier steering methods, better diagnosis of the causes of shimmying, adequate tire equipment to carry the car, stabilization of the number of tire sizes and corresponding carcass strength requirements, no sound reason exists to prevent the majority of tire and automotive engineers from agreement upon a standard load-inflation table for balloon tires.

In adopting a standard table it should be kept clearly in mind that the principal advantage of the balloon tire is its provision for improved riding comfort. It is claimed by some that riding comfort is supplied mainly by rear tires and that front tire inflation pressures can be raised, without appreciable discomfort, considerably above the deflection required on front wheel loads. While this has been done in a number of cases, it is illogical because the tire fights the road. The fact that front-seat riding usually has been considered more comfortable than rear seat riding is no reason for not accepting the full front-seat riding benefits from the balloon tire instead of only part of them. Any material increase of front-wheel inflation pressure is therefore a temporary expedient and not a solution of the problem.

Effects of Punctures and Bruises

The balloon tire has been accused of being more readily punctured and seriously damaged by bruises than the high-pressure tire. B. J. Lemon asserts, however, that an elaborate series of puncture and bruise tests conducted with four and six-ply balloon tires indicates that generally speaking this is not true. The results of the tests were summarized as follows:

(1) A nail or other sharp object penetrates or enters the tread rubber of a six-ply tire more easily than it does a four-ply tire, due to the greater rigidity of the six-ply carcass.

(2) The higher the air pressure is, the more easily the puncturing object first penetrates the treads of the two types of tire.

(3) The complete penetration of the carcass as well as the tube, after the object has entered the tread, is less difficult with a four-ply than with a six-ply tire. The difference in degree is about proportional to the carcass thickness.

(4) When a tire is dealt a heavy blow by a stone or rut and the obstruction does not drive the carcass to the rim, generally a four-ply tire suffers less than one with six plies of fabric. The reason is that the thinner carcass deflects to a greater degree and over a longer period, and thus slows up the acceleration or rate of change of velocity of the blow. This ability to stretch out the time period of an impact blow is one of the great virtues of the balloon tire, and is more conspicuous in a thin than in a thick carcass.

(5) The rupture of a balloon tire by bruising does not occur usually in stages of one ply at a time, except where the tire is first cut. The blow breaks either all plies or none. In this respect cord tires differ from those made of square-woven fabric. Therefore, a balloon tire may endure thousands of reasonably heavy road blows without damage, but be put completely out of service by one crushing impact.

Loss of Air from Tubes

The balloon tire has also been accused of losing air faster than does the high-pressure tire, but this is not the case, B. J. Lemon stated. Exhaustive tests, he said, made to locate the sources and measure the amounts of such reported losses in different types and sizes of inner tubes of varied thickness, definitely indicate that loss of pressure in tubes is due chiefly to diffusion through the rubber and not through the valve stem or about the valve base, since similar losses are obtained when the valve is sealed. This fact is further confirmed by the rate of diffusion of gases through tubes. The conclusions resulting from the tests are as follows:

(1) Tubes in balloon tires, at both high and low inflation pressures, do not lose air more rapidly than do tubes in high-pressure tires; generally they lose air less rapidly. However, the effect of such air loss is more detrimental to the balloon than to the high-pressure tire, due to a lower initial inflation.

(2) In balloon tire tubes as made at present, the inflation pressure loss runs from 1 to 5 pounds per week, depending on the quality of the tube, the length of time in service and the mileage of such service.

(3) Tubes operated at both high and low pressures continue to lose pressure steadily in proportion to the nature of the gas used and to the thickness of the tube.

(4) Inflation pressure loss is greater for tubes running than for tubes static. The greater the daily mileage is, the greater the loss will be when measured at uniform temperature.

(5) A tube inflated with carbon dioxide loses pressure much faster than one inflated with nitrogen, the ratio being approximately the same as the rate of diffusion of these gases through a rubber diaphragm.

(6) The loss during the first day is higher in all tubes than for the second day. Thereafter, pressure diminution follows a slowly decreasing constant. Evidence is not yet available to permit drawing conclusions regarding the limit of pressure loss with an increase in tube service.

(7) There may be a period in tube service, before the tube structure begins to weaken, at which pressure loss is negligible. A series of pressure loss curves for tubes run to destruction in service would be interesting.

(8) Balloon tire experience clearly points to the need of more frequent inspection of inflation pressure than has been customary with high-pressure tires. Once a week is not too often even when tubes are in first class condition. To the three prerequisites of automobile operation, water, oil and gasoline, the motorist should add a fourth, air, and be sure that what is free is neither forgotten nor short measured.

LEADING IMPORTERS OF AMERICAN RUBBER THREAD

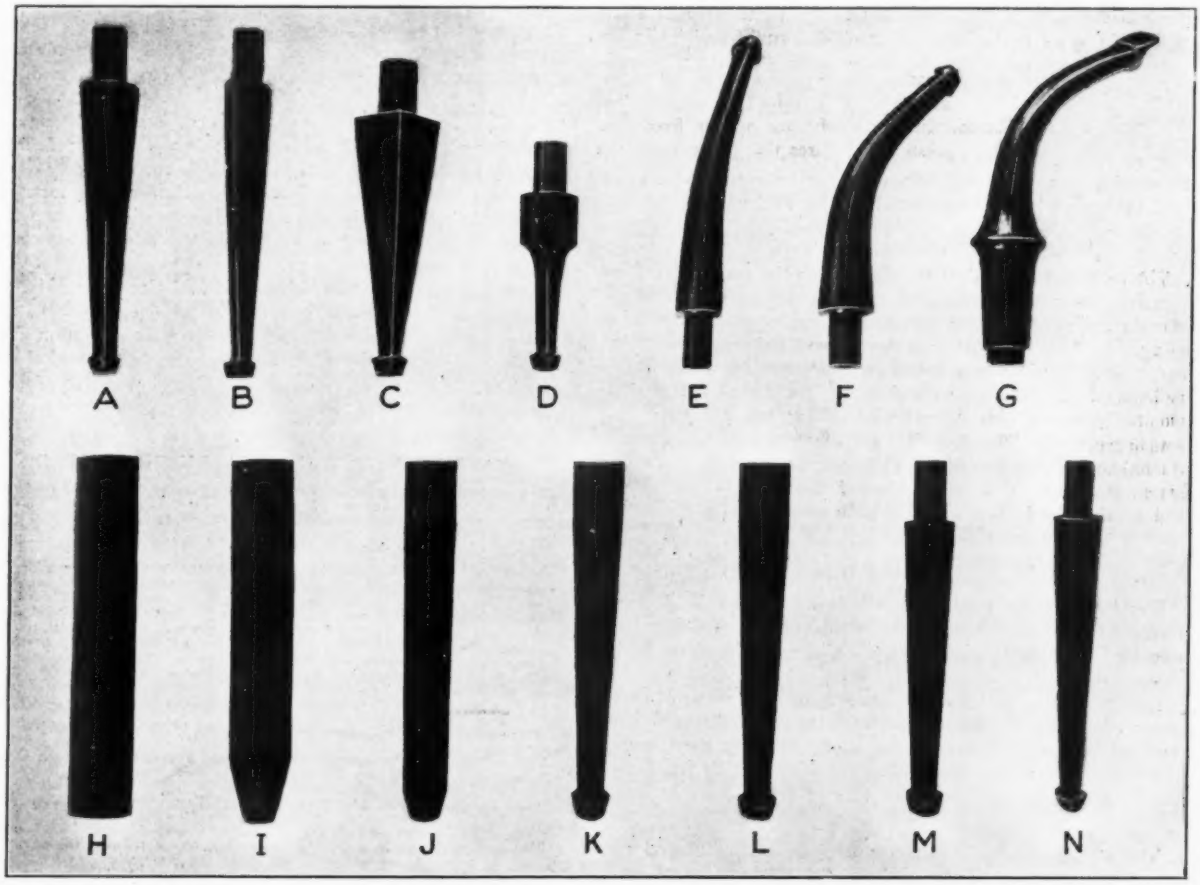
Imports by England during 1924 of American-made rubber thread totaling $569,055 represent somewhat of a decline in value as compared with the figure for the year 1922, or $577,127, a still further falling-off being evident in the 1924 total for France of $301,760, as compared with the 1922 estimate of $338,339. While these two nations still continue to be far in the lead in their importations of such goods, it is interesting to note the gains made by Japan, whose purchases of this thread, reaching a total value in 1922 of only $117,871, rose in 1924 to $189,730. Other important customers during 1924 included Italy, Canada, Germany, Spain, and Belgium.

SOLES AND HEELS EXPORTED FROM THE UNITED STATES DURING 1924 totaled 2,511,285 pounds, value $823,022. The corresponding value for the year 1922 was $699,135.

Hard Rubber Pipe Bits[1]

Materials of Pipe Construction—Bowls and Bits—Hard Rubber and Bakelite—Pipe Bit Shapes, Finished and in Process—Molded and Cut Bits—Special Machines and Processes

THE universal smoking habit gives to smoking pipes a world-wide interest and induces smokers to make a working collection of favorite pipes. The exercise of this hobby of smokers affords a constant outlet for a large production of pipes and smoking paraphernalia, in which, incidentally, a considerable weight of hard rubber is employed. In the United States there are a few very large manufactories of pipes and innumerable small ones.



Hard Rubber Pipe Bit Shapes. Progressive Steps in Their Manufacture

Pipe Construction

The majority of smokers prefer pipe bowls made of briar wood. This is a gnarly growth that is dug from the ground at the base of a special tree in the forests of Algeria, Africa, where the briar is indigenous. Preference for briar pipes practically amounts to standardization of that material as unquestionably the best for the purpose.

Various substances have been utilized as material for the stem, mouthpiece or "bit" of pipes. In the days of the once popular "Meerschaum" the bit was made of the fossil resin, amber. The diminishing supply of this material, however, caused pipe manufacturers to turn to other materials, chief of which are hard rubber and bakelite. While both are used for pipe bits hard rubber is preferred and more universally used although bakelite has many advantages. The ability of bakelite to withstand quite high heat without damage makes this material most desirable for cigar holders, a purpose for which hard rubber is not at all suitable because of its low ignition point and offensive odor when strongly heated.

Other advantages of hard rubber as a material for pipe bits are its easy workability both by plastic means and by machining; also, it is more favorable in cost than bakelite. This is a highly important feature in the enormous volume production of pipe bits, than which there are few more competitive items in trade. The cheapest pipe must have a bit effective, comfortable and attractive to the user even at the lowest price.

[1]Data and illustrations supplied by William Demuth Co., 230 Fifth Avenue, New York, N. Y.

Hard Rubber Pipe Bits

While pipes are made in variety without end and every smoker has his favorite form, there is a general marked preference in favor of the briar with a hard rubber bit. Some of the practical reasons for this settled choice have been indicated.

The item of pipe bits is one of considerable value and importance in the hard rubber trade and the methods of production are of interest to smokers generally.

Pipe Bit Shapes

In point of styles pipe bits are made in four principal shapes or cross-sections, namely, oval, round, square and saddle contour, as indicated respectively by A, B, C and D in the illustration. Bits of these patterns are made in various lengths. In form they are straight, half bent and full bent as at E and F. For their attachment to the stem of the bowl the tenon is turned to a straight push fit in 90 per cent of bits. A modified form of push fit is the German style known as "Steck," shown at G. This type is made only for the so-called Wellington pipe.

Manufacturing Processes

Hard rubber bits are made by two general processes, namely, by shaping in a mold and vulcanizing, or by cutting vulcanized hard rubber stock either from solid rods or thick sheets.

Molded Bits

The molding process does not differ from the usual methods of pressing and curing small hard rubber articles, except that the cure in the molds is only sufficiently long to advance the cure to a point where the articles can be removed and retain their form under the heat of an open steam cure for their full vulcanization in bulk. Molded bits are cured in straight form with air hole molded by means of a central wire. Short bits are made as a double piece in each mold cavity, and long bits are molded singly. As finished for the use of the pipe maker, the double pieces are sawed apart, the mold fins are buffed away and the bit cleaned and polished by buffing with a tripoli compound. Such bits are used for the cheaper pipes.

Hand-Cut Bits

Bits for the better grade pipes are cut from vulcanite, which is received in the usual merchantable forms of hard rubber rods of circular or elliptical cross-section, or from thick hard rubber sheets.

Rods are not of as high grade stock as sheets but their quality better adapts the bits made from them to retain the bent forms required because the stock is less elastic than the sheet quality. Sheet stock is cut for square bits and used only on the highest price pipes.

Cutting Operations

The cutting of pipe bits is conducted as a volume production proposition utilizing special methods and machines found in no other branch of manufacture. Several distinct machine operations are involved from the rough stock to the finished bit. The various stages of the process are pictured in the illustration. The steps in the formation of an oval bit are indicated by H, I, J, K, L, M, and N. The rough hard rubber rod H is cut by a band saw into bit lengths and spotted at each end with a center for the various turning operations. The pieces for square bits are sawed from thick sheets first in strips for the bit length, then in blunt wedge form approximately the taper of the finished bit, thus economizing stock.

The operations I, J, and K are performed on separate lathes of special design. The first operation on the rough stock is shaping the head of the bit I, which is the tip that enters the mouth. This cut is simply a short sharp taper on the end of the rod. It outlines the sides of the head and determines its shape around the smoke hole outlet. The sides of the bit J are shaped by a cut beginning just beyond the slope of the head and extending the full length of the piece. The next operation, K, differentiates the head from the main body of the bit by forming a shoulder behind the head and continuing the cut to within a short distance of the opposite end. This cut gives the bit its full tapered shape.

Boring the air hole L is done on a special boring tool cleverly designed and operated to produce a straight air passage through the bit without burning the rapidly cut rubber, regardless of the length of bore required. The air hole outlet at the head of the bit terminates in a tapered fan-like opening which is cut by a special cutter head operating with the speed of a sewing machine, converting the end of the round air hole into a perfect fan-like slit. This form of opening is called the "dry smoke." It permits the smoke to spread from the bit as it enters the mouth, thus eliminating a hot jet and reducing the temperature appreciably.

The tenon M is turned on a grinding tool, by which the thick end of the bit is shouldered down to a cylindrical tubular extension or tenon. The diameter of the tenon is cut to a very close tolerance in order that it may give a tight push fit into the stem of the pipe.

Finishing operations on the bit N consist of inlaying the manufacturer's trade mark, buffing, and polishing. The trade mark is usually a minute geometrical pattern such as a triangle.

The bent bits E, F, and G are given their curved forms by very simple and effective means. The straight bits are first rendered pliable, then bent on a form, upon which they are cooled in permanent shapes.

The extreme care exercised at each step of pipe bit manufacture corresponds with equal care bestowed on the selection of the material of the pipes themselves both in design and workmanship that the assembled finished product may be neat, practical and satisfactory in service.

STATEMENT OF THE INDIA RUBBER WORLD

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of THE INDIA RUBBER WORLD, published monthly at New York, N. Y., for April 1, 1925.

State of New York }
County of New York } ss.:

Before me, a notary public in and for the State and county aforesaid, personally appeared E. M. Hoag, who, having been duly sworn according to law, deposes and says that she is the business manager of THE INDIA RUBBER WORLD, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, The India Rubber Publishing Co., 25 West Forty-fifth Street, New York City.

Editor, Henry C. Pearson, 25 West Forty-fifth Street, New York City.

Managing Editor, Henry C. Pearson, 25 West Forty-fifth Street, New York City.

Business Manager, E. M. Hoag, 25 West Forty-fifth Street, New York City.

2. That the owners are: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.)

The India Rubber Publishing Co., 25 West Forty-fifth Street, New York City.

Henry C. Pearson, 25 West Forty-fifth Street, New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by her.

E. M. Hoag, Business Manager.

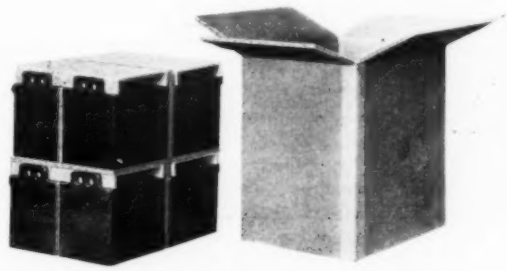
Sworn to and subscribed before me this 20th day of March, 1925.
(Seal) HARRY HOAG, Notary Public.

(My commission expires March 30, 1927.)

How to Reduce Packing Costs for Hard Rubber Goods[1]

Corrugated Fiber Board Boxes—Special Containers for Battery Boxes and Loud Speakers

THE Department of Commerce at Washington has spent a great deal of time and money in the last year or two toward the simplification of business methods with a view to eliminating waste in industry, and one of the largest fields where the

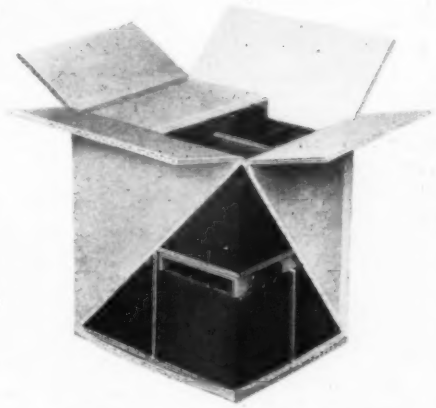


Inner and Outer Battery Box Container

simplified practices can be put into effect, and where they are sure to result in savings, is in the packing and shipping departments of industry.

Corrugated Fiber Containers Save Money

A number of industries are making intensive surveys at present to ascertain savings possible through the use of corrugated fiber board shipping cases to replace large, expensive wood boxes. An illustration of this is in the textile field. Here they have been shipping fifty to one hundred dozen suits of underwear, shirts, etc., in large, heavy, expensive wood cases. It has been found that by using half a dozen corrugated fiber boxes, instead of the large wood box, tremendous savings could be made, not only in the original cost of the packing itself, but also in transportation charges, handling, etc.



Cross-Section of Battery Box Container

Fiber Board Boxes Becoming Popular

The National Retail Dry Goods Association, with a membership of several thousand, is just completing a coast to coast survey of this problem and indications are that the members of this association will demand that their suppliers replace these large, expensive shipping cases with fiber packages containing smaller units of various commodities. This not only applies to textiles, but to glassware, pottery, soap, canned goods and a great many other commodities.

Some of the manufacturers of hard rubber goods are already using considerable quantities of corrugated fiber board boxes and find that their goods are delivered in first-class shape and through the use of this type of package they make appreciable savings for themselves.

Advantages of Corrugated Board Containers

These fiber board boxes make savings in the following ways:

The boxes themselves and such inner packing as is used are made to ship flat, which means the packing will take up the minimum amount of storage space.

Corrugated boxes are sealed with cold, quick-setting glue (liquid glass) which is a very economical method of sealing and does not require experienced labor.

After the package is ready for shipment it is sealed, pilfer-proof and dust-proof. We say pilfer-proof, meaning that concealed losses are eliminated, because if the box is pilfered it must be mutilated.

These boxes not only take up less storage space before they are packed but also afterward. You can store many more corrugated fiber board boxes in a warehouse or in a railroad car than wood boxes or other kinds of packages.

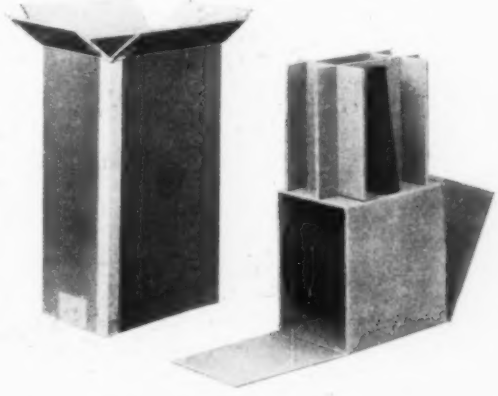
They combine light weight with great strength and cushion, on account of the arch construction, and the package absorbs the shocks received in transit, and on account of its light weight makes savings in transportation charges.

Special Hard Rubber Cases

The design of the corrugated fiber box is important, especially for certain types of hard rubber goods, and the larger manufacturers of these boxes are very efficient in designing the type of box needed. We show herewith illustrations of some of these special packages. One is a special package for radio loud speakers, and two others illustrate special packing for rubber battery boxes. This box is designed to carry eight battery boxes, and the illustrations show exactly how the inner packing is designed to protect the rubber battery boxes, also a cross-section of the box after the battery boxes are placed in the container.

Box Manufacturers Offer Expert Advice

A few of these large manufacturers of corrugated fiber products have in their



Special Box for Hard Rubber Radio Loud Speaker

employ special sales engineers who have been trained to go into the plants of manufacturers of hard rubber goods and prescribe special designs, where needed, to carry the rubber goods safely. Often the regular designs of boxes will do the work, but as shown

[1] Data and illustrations from Midwest Box Co., Chicago, Ill.

by the illustrations it is sometimes necessary to have special inner packing.

A manufacturer of hard rubber goods who desires to make savings in his packing department will miss an opportunity if he does not call upon some of these large manufacturers to make a survey of his packing department. These experts come in without cost to the shipper. They only ask for an opportunity to demonstrate that corrugated fiber packages will save money and carry the goods better.

Another department of the government in Washington is agitating the conservation of lumber and the corrugated fiber box industry is one which contributes largely to this movement. Corrugated fiber boxes are made from paper which contains some wood fiber, but also contains waste paper and straw paper made from straw from the fields. After the boxes have been used they find their way back to the paper mills, through the waste paper dealers, and are made into boxes again.

THE DEVELOPMENT OF CORD TIRE FABRIC

The question has been frequently asked: What development in the manufacture of cotton tire fabric has made balloon tires possible and practical? The obvious answer is: Cord fabric. By the time cord fabric had come to be used as the carcass of tires, beyond an experimental way, very few changes in construction were necessary to make balloon tires practical. Their manufacture simply awaited some tire manufacturer's conceiving the idea.

In the early days of cord fabric for high pressure tires the average weight of this material was from 14½ to 15 ounces per square yard, and the yarns used in its manufacture were invariably 23s/5/3. This weight necessitated weaving the parallel warp cords so close together that proper insulation of the individual cords was practically impossible. This fabric would not have produced a satisfactory balloon tire, because the chafing of adjacent unprotected cords in a tire with such pronounced flexing nature would soon cause a failure. This fault was apparent to some extent in high pressure tires, and was remedied before the advent of balloon tires.

The average weight of cord fabric now in use is about 12½ to 13 ounces per square yard, and the great bulk of it is made of 23/5/3 warp yarn. This reduction in weight is accomplished by reducing the number of warp cords per inch, with the resultant effect of permitting a coating of rubber to be forced between adjacent parallel cords, which with the rubber on top and bottom of the cords produces perfect insulation, thus eliminating the danger of chafing from ply contact in flexing.

Different constructions of cord fabric have been tried, from cotton ranging from low middling 1-inch carded American to combed super-Sakellaridis; different counts and plies of yarn, such as 7/2/2, 13/3/3, and 23/4/3, with a wide range of twists; and with square yard weights of fabric ranging from 10½ ounces to 13 ounces.

So far as balloon tires go, 23/5/3 yarns are used almost entirely by reputable tire manufacturers, and the cotton used is long staple and very good grade. For high pressure cord tires 23/4/3 yarn of long staple, good grade cotton is used in a limited way, but the economy effected by its use is seriously questioned. Fabric constructed of 7/2/2 or 13/3/3 yarns of short staple, low grade cotton has found very little favor, and it is very doubtful whether this quality of fabric is good enough for even the smallest sizes of high pressure cord tires. In any event, the usefulness of these low grade fabrics is decidedly limited.

FORD ADOPTS BALLOON TIRES

At a slight additional cost balloon tires are now being furnished as optional equipment for all models built by the Ford Motor Co. Such casings will be of standard size 29 by 4.40 straightside and mounted on wood wheels.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

NUMBER	INQUIRY
589	Information regarding gritless rubber lacs.
590	Good rubber accelerator for sales in France.
591	Manufacturer of rubber quoits and horseshoes.
592	Upholstery materials, rubber cloths and imitation leathers. Sole representation in Great Britain.
593	Manufacturer of the Cox ball machine.
594	Manufacturer to produce a patented rubber arch support.
595	Manufacturer of rubber face mask for beauty culture.
596	Address of concern making rubber sponges.
597	Address of manufacturer of molded rubber toys.
598	Formula for cement for attaching rubber flooring to wood or cement floors.
599	Address of toy balloon manufacturer.
600	Information concerning "Mintite" finish for rubber.
601	Address of manufacturer of standard rubber bands.
602	Source of supply of equipment for steam splicing inner tubes.
603	Information concerning a machine for granulating rubber for dental purposes.
604	Address of manufacturer of smooth faucet attachments.
605	For machine for making tennis shoes.

Foreign Trade Opportunities

Address and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th Street, New York, N. Y.

NUMBER	COUNTRY AND COMMODITY	PURCHASE OR AGENCY
14,250	Italy—Rosin for rubber and soap industries...	Agency
14,296	Sweden—Rubber and balata belting and machine packings	Purchase and Agency
14,297	Uruguay—Machinery for making rubber articles. Automobile tire valves.....	Purchase
14,298	England—Rubber accessories and parts for automobiles (not tires).....	Exclusive Agency
14,310	Brazil—Automobile tires	Agency
14,393	Germany—Tripoli powder for polishing hard rubber goods.....	Purchase
14,402	Mexico—Vulcanizing equipment, gasoline-burning	Purchase
14,403	Egypt—Automobile tires.....	Purchase and Agency
14,404	Germany—Washer junk rings for insulating bottles, 50,000 to 100,000.....	Purchase
14,405	Siam—Hard rubber trusses; rubberset brushes, shaving and hair	Purchase
14,406	Egypt—Rubber soled canvas shoes.....	Agency
14,407	Netherlands—Rubber raincoats	Agency
14,421	France—Rubber articles	Purchase and Agency
14,459	China—Hunting goods, decoys, etc.....	Purchase and Agency
14,506	Austria—Automobile tires.....	Purchase and Agency
14,514	Chile—Osnaburgs	Agency
14,536	Germany—Cord thread for automobile tire making	Purchase
14,538	Beluchistan—Rubber novelties	Purchase
14,541	India—Waterproof coats, new and second-hand	Purchase
14,580	Germany—Sanitary and surgical rubber goods.	Purchase
14,581	Rumania—Scrap rubber tires and tubes.....	Purchase
14,589	Rumania—Elastic suspenders	Purchase

Trade List Available

EUR-6045 Italy—Rubber goods and specialties.....Importers

FOREIGN RUBBER TRADE INFORMATION

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. The publications which give details of the rubber industry in some one country are marked with an asterisk.

NUMBER	SPECIAL CIRCULAR
*824	"January British Exports of Rubber Footwear."
825	"Tire Market of Pernambuco, Brazil," etc., etc.
*826	"January British Exports of Automobile Casings."
*828	"February Imports of Rubber Tires."
*832	"Market for Rubber Balls and Balloons in Wales."
*833	"1924 Canadian Exports of Tires and Tubes."
836	"Limited French Demand for High-Grade Rubber Footwear," etc., etc.
*840	"Retail Tire Prices in Australia."
844	"Tire Market of Puerto Cortes, Honduras," etc., etc.
*846	"Market for Rubber Heels in the Netherlands and Irish Free State."
*847	"French Exports of Rubber Footwear During January and February, 1925."
*848	"British Tire Exports in February, 1925."
*849	"British Exports of Rubber Footwear in February, 1925."
*850	"French Exports of Rubber Tires During January and February, 1925."
*852	"Market for American Tires in Germany."

More Safety Work Needed in Rubber Mills

Report of the Rubber Section, National Safety Council—Accident Experience—Severity and Frequency Rate—Causes of Lost Time—Accident Cases

By E. L. Hewitt[1]

MAXIMUM safety of employes, with consequent minimum frequency and severity of accidents, is among the best forms of industrial economy. To insure it, constant safety work is necessary. This implies not only the provision of all possible safeguards by the employer, but the education and encouragement of employes in personal safety and accident prevention.

The importance of constant accident prevention work in industry and what it will accomplish are clearly shown by the accident statistics for recent years. It is a well-known fact among manufacturers that during the business depression years 1922 and 1923 there was a general let-up in the safety work being done in practically all the industries throughout the country, which almost immediately was reflected in their experience, as shown by statistics compiled by the National Safety Council. As a result, the year 1923 showed a general increase over 1922 in the frequency and severity of accidents for all the industries in the country. Several different explanations have been offered for this general condition but they are for the most part opinionated. Curtailment of safety work is unquestionably one of the underlying general causes.

The mistakes that some of the rubber companies made during periods of curtailment in letting up on their safety work are reflected in the accompanying statistics and charts of the accident experience of the rubber industry prepared by the Rubber Section of the National Safety Council.

Table 1 shows the frequency and severity of accidents in the rubber industry in six months' periods for 3½ years beginning the first of 1921. Incidentally, this severity and frequency rate provides the standard basis of calculating these figures now employed by the National Safety Council and the United States Department of Labor. It will be noticed that during the years 1922 and 1923 there was a considerable increase in the severity of accidents in the rubber industry, which reached its maximum during the first six months of 1923. This is more graphically shown by the accompanying chart than by the table.

[1]Chairman, Rubber Section, National Safety Council.

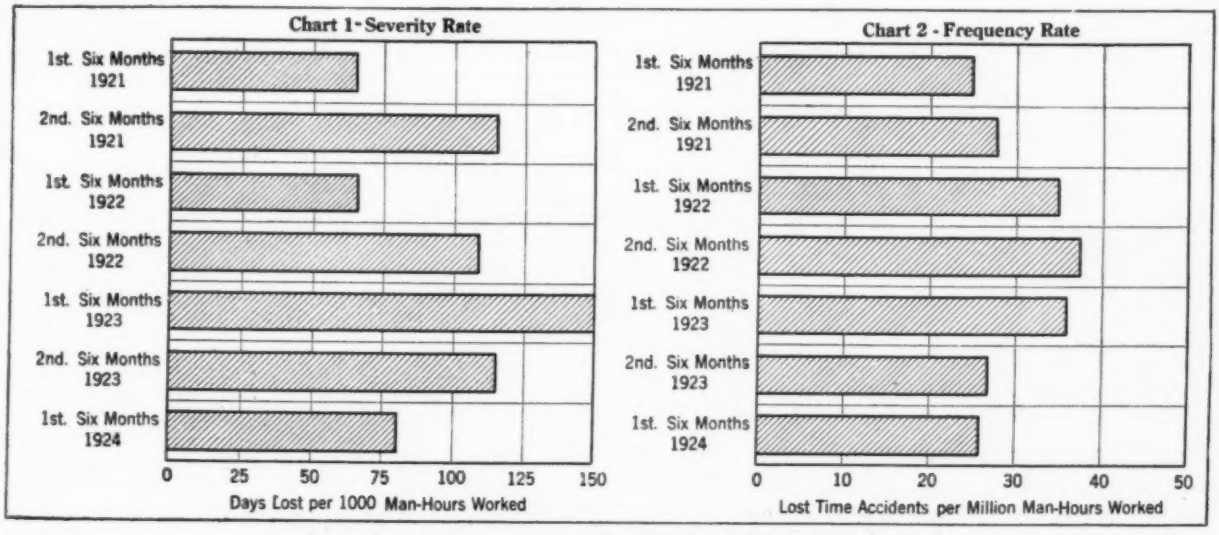
TABLE 1. ACCIDENT EXPERIENCE OF THE RUBBER INDUSTRY

	Severity Rate. Days Lost per Thousand Man Hours Worked	Frequency Rate. Lost Time Accidents per Million Man Hours
First six months, 1921	.65	24.8
Second six months, 1921	1.15	27.6
First six months, 1922	.67	34.8
Second six months, 1922	1.07	37.2
First six months, 1923	1.50	35.8
Second six months, 1923	1.15	26.7
First six months, 1924	.81	25.9
Over 3½ years	1.02	30.9

TABLE 2. CAUSES OF LOST TIME ACCIDENT CASES

First Six Months, 1924

Machine Accidents			
Mills, refiners, washers, calenders	41		
Tire building machines	33		
Vulcanizing apparatus	19		
Cleaning and repairing machinery	17		
All other machine accidents	140	250	
Tools and Accessories			
Molds	76		
Cores	28		
Knives and shears	85		
Other tools	61	250	
Burns			
Heaters, presses, pipes	12		
All other burns	39	51	
Eye Accidents			
All eye accidents	77	77	
Falls			
On level, tripping	25		
On level, slipping	55		
All other falls	29	109	
Miscellaneous Accidents			
Stripping, finishing and handling tires	120		
Handling other material	232		
Falling material	179		
Other miscellaneous	334	865	1,602



Charts Showing Severity and Frequency Rate of Rubber Mill Accidents

The frequency rate, which reached its maximum during the second six months of 1922, and the chart indicating the fluctuation in that rate furnish a partial explanation of the increase in the severity rate during the period covered. Undoubtedly the increase in the frequency of lost time cases during the year 1922 and the first six months of 1923 was due to the let-up in safety work. Certainly the gradual resumption of safety work in the rubber industry which began during the second six months of 1923 had the immediate effect of lowering both the severity and the frequency rates. The figures for the first six months of 1924, the latest available for the rubber industry, represent a considerable further improvement, indicating that experience is now tending in the right direction. The rubber industry, from a safety standpoint, is fast coming into its own, as a comparison of figures with other industries indicate, but there is still much to be done, not only in safeguarding employes but in encouraging their cooperation in accident prevention.

Table 2 shows the causes of lost time accident cases in the rubber industry for the first six months of 1924. It will be noticed that of the total 1,602 accidents, 250, or about 15½ per cent, are machine accidents, while a like number are attributable to tools and accessories. It is rather surprising that of the machine accidents causing lost time which originated from mills, refiners, washers and calenders, generally considered the most dangerous machines in rubber mills, there were only 41, or about 2½ per cent of the total. These figures bear out the contention of a good many safety engineers in the rubber industry that mill rooms are fast becoming one of the safest places in the plant as far as the frequency of accidents is concerned, and those accidents which do occur are becoming less severe, due to the installations of modern mill equipment.

A careful study of the figures in Table 2, especially the fact that over half the total number were miscellaneous accidents, and also the large number of accidents in the use of tools and accessories, seems to indicate conclusively that safeguards have been well provided in the rubber industry and that the greatest present need is intensive education of employes in personal carefulness and safety through well planned and organized no-accident campaigns.

Tire Wear on Different Road Surfaces

Experiments conducted last summer by the Engineering Experiment Station of the State College of Washington under the direction of H. V. Carpenter to determine the effect of different kinds of road surface on tire wear are described in a preliminary report in Engineering Bulletin No. 16. The primary object of the tests was to determine whether the saving in fuel and tire wear on good roads warrants the greater cost of these roads, or, more precisely, what amount of traffic an improved road of a given kind must carry in order that its additional cost may be compensated for by savings due to reduced fuel consumption and tire wear.

How the Tests Were Conducted

Tire wear was determined by removing the tires with their rims from the cars, cleaning them thoroughly by dry-brushing and wiping, letting out the air by taking out the valve inside, and weighing on a sensitive Troemmer balance, the readings of which were accurate to ½ gram, which is said to be about equal to the wear on two miles of concrete road. After a test run of 50 to 75 miles the tires with their rims were removed from the wheels and cleaned and weighed the same as at the beginning, the difference in weight then giving the wear. The average wear of the four tires was taken in every case.

Tires neither new nor old were used, to avoid any false impression of excessive wear, as the sharp edges of the tread design wear off rapidly on new tires, while particles of rubber are easily detached from old tires worn down to the fabric. Speed was kept as nearly constant as possible in each test, and road moisture was avoided as it was found that tires moistened near the end of a run might absorb moisture equal in weight to the wear on some 12 miles of macadam. As it is known that rubber cuts more readily when wet than when dry, it was reasoned that the wear of the tire would be greater in wet than in dry weather. It was found that atmospheric temperature has a considerable effect on the rate of tire wear, and temperature measurements were therefore made during each run. Tests were run at different atmospheric temperatures at the same speed and also at different speeds at the same temperature, so as to separate the effects of these two factors. A definite relation between the atmospheric temperature and the rate of tire wear was observed.

Regarding the rate of tire wear and the fuel consumption at different speeds over the same road, it was noted that tire wear not only increases with increase in speed, but the rate of increase grows with the speed. Two explanations of this phenomenon are offered. At high speeds there is more violent impact of the tires against road obstructions, and, also, there is more bouncing of the wheel off the roadway, followed by spinning of the wheel and grinding of the tire tread against the road surface when it returns to contact with the latter.

Unlike most former tests to determine the relation between road speed and fuel consumption, the experiments show a continuous increase in fuel consumption with increase in speed. It is stated that such a relation would be expected because there is more loss of power at high speed from spinning of the wheels and slipping on the road, and there is also more loss from air resistance.

In the relation of tire wear to both speed and atmospheric temperature it was noted that changes in temperature have a much greater effect than changes in speed. For example, at 100 degrees F. the rate of wear is about five times as great as at 40 degrees, while at 40 miles per hour the rate of wear appears to be only about one and one-half times as great as at 10 miles per hour.

Calculations of tire and fuel costs, in dollars per thousand miles, indicate that the cost is about three times as great on good macadam as on concrete and eight times as great on poor macadam as on concrete. Fuel consumption on macadam roads ranged from 110 per cent of the consumption on concrete roads when the surface was good to 151 per cent when the surface was poor.

From the tire wear tests the conclusion is drawn that tire treads wear off approximately 17 times as fast on good macadam as on concrete and 56 times as fast on very poor macadam. These figures should not be misinterpreted, however. They do not mean that the same tires will give 56 times the mileage on concrete road as on poor macadam, for even though tread wear is greatly reduced, as it apparently is on good concrete roads, there are numerous other factors which limit the life of tires.

IMPORTANCE OF THE MINUS SIGN

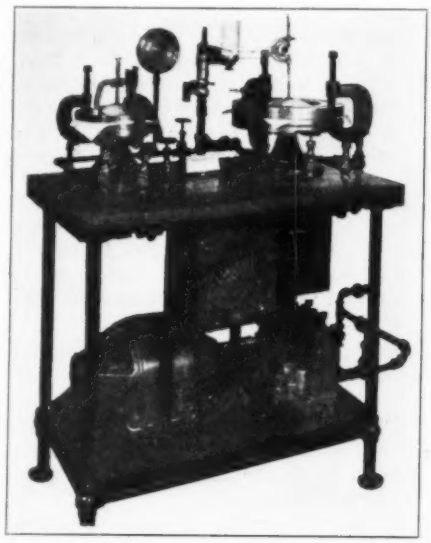
The omission of the negative sign (—) from before 12 degrees C. in the article "Determination of Balata in Balata-Rubber Mixtures," which appeared in our April issue, was an error, as it made the method only 60 per cent efficient. In precipitating the balata the solution must be cooled to at least 12 degrees C. below zero, and not 12 degrees C. above zero. This makes a difference of 24 degrees.

ACCORDING TO DATA FURNISHED BY THE RUBBER ASSOCIATION OF America and representing about 75 per cent of the automobile tire industry, the average monthly importations of crude rubber by the tire manufacturers of the United States have steadily risen from 9,656,720 pounds in 1913 to 61,487,027 in 1924, or considerably more than a sixfold increase. The average price per pound during 1913 was estimated at $0.807, the figure for 1924 being $0.211.

Comparison of Bursting Test and Grab Test for Knit Goods[1]

By B. H. Foster[2]

OUR laboratory is equipped with three bursting machines of different sizes, a Mullen tester which has a diaphragm of 1¼ inches diameter, a bursting machine having a diaphragm of 4 inches diameter, and a bursting machine having a diaphragm of 8 inches diameter. The 4-inch and 8-inch machines designed and made at the Textile Section are shown in the illustration. Hydraulic pressure is exerted against the diaphragms over which the sample to be tested is clamped. The pressure is exerted by a motor-driven pump under the testing bench. The tests are autographically charted by the use of an ordinary steam engine indicator.



Fabric Bursting Tester

The samples of knit goods used in the investigation were single thread worsted jersey, double thread worsted jersey, pink corset net, 6½ cotton net, 4½ cotton net and 3½ cotton net. The deductions brought out by this investigation are therefore only considered applicable to knit fabrics.

The samples were not conditioned for moisture, because a more accurate comparison of results could be had by breaking the samples under normal room conditions, for the following reasons: First, all of our bursting machines were located in a room that is not conditioned; second, the duration of test was for only two or three hours; and third, we did not want the operator to feel that speed was essential to get sample placed in machine and broken in the minimum of time before having a chance to lose any of its moisture.

Ten breaks were made with Mullen tester, five breaks with the 4-inch machine and three breaks with the 8-inch machine. The figures subsequently tabulated for each machine are the average of number of breaks mentioned. The rise in inches was measured and recorded for each breaking. The figures obtained for the grab test represent the average of five breaks in the wales direction and five in the courses direction. The machine used was Scott's 400-800-pound horizontal tester, 1 by 1-inch jaws, 1 inch apart, speed of pulling jaw 12 inches per minute. Readings were taken on the 400-pound dial.

The diaphragm error is the pounds per square inch necessary to stretch the diaphragm to the same relative position it is in when the fabric is ruptured. It is determined after each break by removing the broken sample and applying the pressure to the diaphragm until the same rise in inches is reached as for the break. The gage reading at this point is the diaphragm error.

The indicated gage reading is the sum of the pounds per square inch of fluid pressure necessary to break the fabric plus that which is required to stretch the rubber diaphragm. For the same fabric—the smaller the diaphragm the greater is the indicated pressure required to break it. Therefore, the rubber diaphragm in the smaller machine must be correspondingly stronger in order to stand the strain of rupture without breaking. The diaphragm error is then larger for Mullen test than for either the 4 or 8-inch machines. The indicated gage reading minus the diaphragm error gives the true pounds per square inch of fluid pressure required to break a fabric. The true pounds per square inch pressure multiplied by the diameter of the opening is constant for all three machines for the same fabric.

If the diameter of opening is taken into consideration and the diaphragm error is determined, it makes little difference in the results obtained what size of machine is used. The product of pounds per square inch times the diameter is the same.

The bursting strength for any knit fabric when found by the formulas as derived for each machine is the same for all three machines. The bursting strength for any knit fabric expressed as so many pounds per inch of width is equal to the strength in pounds of the courses obtained by the 1 by 1-inch grab test. Therefore, the bursting test as applied to knit fabrics is a strength test of the courses only. The grab test has the advantage of testing the strength in both the wales and courses directions.

[1] Read at Providence Meeting of Committee D-13 of American Society for Testing Material.

[2] United States Rubber Co. Laboratory.

Report of Rims Inspected and Approved by Tire & Rim Association

Size	March, 1925		First 3 Months 1925	
Clincher Rims	Number	Per Cent	Number	Per Cent
24 x 3	3,247	0.1	4,035	0.1
26 x 3	13,385	0.6	28,692	0.5
28 x 3	.....	....	607	0.0
30 x 3	4,817	0.2	74,532	1.2
30 x 3½	335,874	14.4	1,543,045	25.2
31 x 4	57,149	2.4	250,857	4.1
Straight-side Rims (Pass.)				
27 x 3½	501	0.0	626	0.0
28 x 3½*	788,935	33.7	1,325,606	21.7
29 x 3½*	70,220	3.1	159,312	2.2
30 x 3½	51,009	2.2	222,383	3.7
32 x 3½	1,116	0.1	3,789	0.1
28 x 4*	277,240	11.9	670,171	10.9
29 x 4*	130,050	5.6	311,219	5.2
30 x 4*	67,499	2.8	168,845	2.8
31 x 4	123	0.0	1,393	0.0
32 x 4	30,580	1.3	67,966	1.3
33 x 4	.....	...	1,720	0.0
34 x 4	.....	....	300	0.0
29 x 4½*	47,821	2.1	124,450	2.0
30 x 4½*	121,323	5.2	314,588	5.1
31 x 4½*	41,388	1.8	120,050	2.0
32 x 4½	54,821	2.4	171,676	2.8
34 x 4½	14,769	0.6	56,947	0.6
30 x 5*	41,318	1.8	80,938	1.3
31 x 5*	49,542	2.1	156,482	2.2
33 x 6*	2,704	0.1	5,773	0.1
Truck Rims:				
30 x 5	83,217	3.6	200,925	3.3
34 x 5	16,658	0.7	56,708	0.6
32 x 6	22,683	1.0	43,490	0.7
36 x 6	2,174	0.1	15,056	0.2
34 x 7	.....	....	6,438	0.1
38 x 7	385	0.0	1,358	0.0
36 x 8	1,229	0.1	3,029	0.0
40 x 8	672	0.0	2,547	0.0
40 x 10	167	0.0	196	0.0
44 x 10	117	0.0	205	0.0
	2,332,733	100.0	6,115,954	100.0

* Balloon casings.

NOTE.—In March 70.2 per cent of all rims produced were for balloon tires. Of the remaining 29.8 per cent, 17 per cent were clinchers, .7 per cent were motorcycle rims and 5.5 per cent were truck rims.

What the Rubber Chemists Are Doing

The Acceleration of Vulcanization[1]

I—Influence of the Acetone-Soluble Constituents of Rubber on the Physical and Chemical Properties of Accelerated Rubber Stocks

By L. B. Sebrell and W. W. Vogt[2]

THE action of fifteen common organic accelerators was investigated, both in extracted and unextracted rubber.

Ammonia Type Accelerators

Hexamethylene tetramine in the absence of resins leads to lower physical properties with hexa but to higher combined sulphur. The resin acids act as retarders of the chemical reaction, probably by neutralizing the ammonia liberated during the curing reactions of the hexa. However, the absence of the resins leads to a lack of soluble zinc, which causes the lower physical properties. Furthermore, in the extracted stock extreme reversion of the stress-strain curve is encountered, with attendant development of the characteristic foul odor common in stocks that contain too small an amount of zinc oxide or none. By the present experiments it appears that soluble zinc compounds rather than zinc oxide are necessary, because in the absence of resin acids the zinc oxide is not capable of reacting directly with hexamethylene tetramine and sulphur.

In the stocks using extracted rubber much lower physical properties, higher combined sulphur, extreme reversion, and an extremely foul odor were found. The stocks were not transparent. This lack of transparency shows that: (1) Hexa does not react directly on zinc oxide to form soluble zinc compounds; (2) The action of the resin acids on the zinc oxide is the major cause of its disappearance.

Aldehyde ammonia is similar to hexa in that in extracted rubber the combined sulphur is higher and the physical tests lower. Here no tendency toward reversion is found.

The writers find that stocks containing 5 parts of zinc oxide have much higher tensiles and greater stiffness than those containing no zinc oxide, regular rubber being used in both cases. However, the difference is less marked with aldehyde ammonia than with many other accelerators.

Sulzin, an inorganic accelerator of approximate composition $ZnSO_4.5NH_3$, is most probably a true ammonia type accelerator.

With extracted rubber it gives lower physical properties and higher combined sulphur than with regular rubber. This again shows the necessity for the presence of soluble zinc in order to form the compound that is responsible for the increase in physical properties.

Diphenyl guanidine gives rather startling differences in behavior, depending upon the formula used. In a test formula containing 1 part of zinc oxide per 100 parts of rubber, the regular rubber yields stocks of much higher physical properties, but with almost identical combined sulphur values, in comparison with the extracted rubber. The regular rubber gave transparent cured sheets, while the extracted rubber stocks were translucent.

On increasing the proportion of zinc oxide to 5 parts on 100 of rubber, the extracted rubber gives higher physical properties, the stress-strain curve being much stiffer. The tensile figures are practically equal at the proper cure (about 40 minutes), but on overcure the regular rubber gives continually rising tensiles, as contrasted with the extracted rubber, whose tensile curve shows no increase. The extracted rubber also gives somewhat higher combined sulphur figures.

The explanation of this surprising behavior is probably as follows:

Diphenyl guanidine will react on zinc oxide directly or through some of its sulphur reaction products to form rubber-soluble zinc-containing compounds. It is therefore not dependent entirely on the supply of soluble zinc soaps ordinarily furnished by the action of the resin acids on the zinc oxide. However, in cases where the quantity of zinc oxide present is abnormally low (say, 1 per cent), the rate of the reaction of diphenyl guanidine and zinc oxide to form the zinc-accelerator compound and the amount formed are materially reduced by reason of mass equilibria; consequently, low physical properties of the cured stock result. If the amount of zinc oxide is increased, the formation of the zinc-accelerator compound is hastened and good physical properties are secured in the cured stocks.

This rubber-soluble zinc-accelerator compound is of unknown composition at present, but is most certainly responsible for the excellent physical properties of the stocks in question.

Since it was found that diphenyl guanidine could dissolve, by some means, sufficient zinc oxide for its activation, it seemed that it might possibly be due to the formation of a compound of the ammonium sulphide type.

It seems evident that ammonium hydrosulphide is an accelerator that possesses the power of dissolving the zinc oxide to form a zinc-accelerator complex, which is responsible for the enhanced physical properties of the resulting stocks. While the action of this compound resembles that of diphenyl guanidine in all particulars, it cannot be said to explain entirely the mechanism of acceleration of this latter compound.

Amines, Piperidine, di-*n*-propylamine, and *p*-toluidine, give results comparable with hexa, aldehyde ammonia, and sulzin, in that the physical properties of the regular rubber stocks are superior, while the rate of combination of sulphur is inferior to the extracted rubber stocks.

Miscellaneous Types

Ethylidene aniline and methylene *p*-toluidine give results similar to those of the ammonia type in that the combined sulphur is higher and the physical tests lower in the extracted rubber stocks. These compounds also require the presence of soluble zinc in order to produce their best physical properties.

Mercapto Type Accelerators—Class I

Comparison of the results obtained with the regular and extracted rubber for the zinc salt of mercaptobenzothiazole shows (1) the physical properties of the "extracted" compound are much inferior to those of the regular compound; (2) the rate of combination of sulphur—i. e, the amount combined per unit of curing time as shown by the slope of the line—is less for the extracted rubber.

Here we have proof that the chemical as well as the physical properties are dependent on the action of the non-rubber constituents. The resin acids react with the zinc oxide to form zinc resinates (soaps), which then react with the accelerator to form the zinc salt of the accelerator, and at the same time set free the resin acids again. The zinc salt of the accelerator then functions as a sulphur carrier.

[1] Presented under the title "The Acceleration of Vulcanization. I—The Influence of the Non-Rubber Constituents on the Physical and Chemical Properties of Rubber Stocks" before the Division of Rubber Chemistry at the 66th Meeting of the American Chemical Society, Milwaukee, Wis., September 10 to 14, 1923.

[2] Goodyear Tire & Rubber Co., Akron, Ohio.

The same conclusions hold for thiocarbanilide. Here again the physical and chemical properties of the extracted rubber are inferior to the regular rubber. It is of interest to record that the "set curing" properties of thiocarbanilide are wholly absent in the extracted rubber stocks, this behavior being additional evidence that the set curing phenomena as well as the physical properties obtained are due to the action of a zinc-containing compound—i. e., the zinc salt of thiocarbanilide.

Mercapto Type Accelerators, Class II

Dithiocarbamates and thiuram disulphides—Dimethylammonium-dimethyldithiocarbamate and tetramethylthiuramdisulphide behave peculiarly in extracted rubber. It might be expected that they would act like the mercapto accelerators of Class I, but as a fact the physical properties of the extracted rubber stocks are equal to the regular rubber in the case of the dithiocarbamate, and only slightly less in the case of the thiuram disulphide. The thiuram disulphide does not give such good results in extracted rubber as it does in the regular rubber, for the following reasons:

(1) The removal of the resin cuts down the amount of hydrogen sulphide available to reduce the disulphide to the dithiocarbamate, although some hydrogen sulphide should still be available by the reaction of sulphur on the protein.

(2) Owing to this lack of hydrogen sulphide the thiuram is not completely reduced to the dithiocarbamate so that it can react with zinc oxide. Consequently, it does not give such good results as the dithiocarbamate.

Determination of Paraffin Wax in Rubber Goods[1]

By J. Lagerquist

The following method for the determination of waxy hydrocarbons in rubber goods is extracted from the extended study of well-known previous methods from various sources.

As a result of experience, the following method for the determination of paraffin wax may be recommended.

The acetone extract from 5 g. of rubber sample is dissolved in vigorously boiling absolute alcohol (40 c.c.) in a flask provided with a reflux condenser. The solution is filtered to remove undissolved sulphur, and the flask and filter are washed with 10—20 c.c. of boiling absolute alcohol. The solution is cooled for 1 hour in a mixture of ice and salt at —4 to —5 degrees C.

If no white flocculent precipitate appears, the absence of paraffin may be assumed, provided there are no indications of mineral oil. If a flocculent precipitate has formed, it should be filtered off through a cooled funnel, and washed with 50—60 c.c. of 90 per cent. by volume, alcohol, also previously cooled as above. The residue on the filter is dissolved in warm benzene, and transferred to a weighed flask. The benzene is distilled on the water bath, and the residue dried for 1 hour at 95—100 degrees C. and weighed. The filtrate is evaporated to dryness on the water bath, the residue dissolved in 10 cc. of carbon tetrachloride and transferred to a separating funnel. The flask is washed first with 10—15 c.c. of carbon tetrachloride and then with 20—25 c.c. of concentrated sulphuric acid, both of which are poured into the funnel. After vigorous shaking, the acid is allowed to settle and is drawn off. The solution is shaken with further portions (about 15 c.c.) until, after repeated shakings, the acid remains colorless. The last acid is drawn off, water and about 100 c.c. of ether are added, and the washing with water is continued so long as there is any acid reaction. The ether solution is allowed to stand in a flask until the water settles, and is then decanted into a weighed flask. The solvent is distilled and the residue dried for one hour at 95—100 degrees C. and weighed. Both residues may contain sulphur, which must be determined and deducted from the total weight. This is done in the usual manner by oxidation with nitric acid of 1.52 density and precipitation as barium sulphate.

[1] *Journal of the Society of Chemical Industry*, April 3, 1925, 152T-162T.

Chemical Patents

The United States

GOLF BALL. Cover material for golf balls comprises gutta percha material admixed with litharge.—William G. Morris, London, England. United States patent No. 1,529,708.

MANUFACTURE OF RUBBER. Substantially all the solid constituents from a colloidal suspension or emulsion of vulcanized rubber in an aqueous medium are obtained by finely comminuting the suspension into a gaseous drying medium.—Philip Schidrowitz and Mervyn S. Stutchbury, London, England. United States patent No. 1,530,164.

GOLF-BALL CORE. An envelope containing powdered metallic lead distributed throughout a liquid of such high viscosity as to maintain the lead in colloidal suspension.—Walter W. Evans, Benton Dales, Walter H. Juve, and Emmet H. Junkins, Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,530,820.

HOLLOW RUBBER ARTICLE CORE. Wool moistened with a solution of caustic potash is used as a core around which the article is built and vulcanized.—John L. Mead, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts. United States patent No. 1,531,712.

PROCESS FOR CLEANING RUBBER MOLDS. The molds are submerged in a caustic solution and made the cathode of an electric couple whereby the caustic action of the solution upon the mold is greatly accelerated.—Lew L. Hamilton, Detroit, Michigan, assignor to The Cleveland Trust Co., trustee, Cleveland, Ohio. United States patent No. 1,531,782.

RENEWED RUBBER. A process for renewing the plastic properties of vulcanized rubber comprises incorporating with vulcanized rubber a condensation product of an aldehyde and an aromatic amine.—H. A. Winkelmann, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,532,213.

RUBBER VULCANIZING MATERIALS AND PROCESSES. The use of organic sulphur compounds of specified types.—Sidney M. Cadwell, Leonia, New Jersey, assignor to The Naugatuck Chemical Co., Naugatuck, Connecticut. United States patents No. 1,532,225; 1,532,226; and 1,532,227.

SUPERFICIALLY FINISHING RUBBER. Rubber surfaced fabrics, etc., are superficially hardened by treatment with bromine and vulcanized.—Charles H. Dennison, Quincy, assignor to American Rubber Co., East Cambridge, both in Massachusetts. United States patent No. 1,532,234.

RUBBER COMPOSITION AND METHOD OF PRESERVING RUBBER. Treatment of rubber with 1, 8-naphthylene diamine.—William C. Geer and Webster N. Jones, Akron, Ohio, assignors to The B. F. Goodrich Co., New York, United States patent No. 1,532,398.

METHOD OF VULCANIZING RUBBER. The use of zinc persulphide as a vulcanizing agent.—C. W. Bedford, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,532,645.

THIOCARBANILIDE DERIVATIVE. The thiourea derivatives constituting the reaction product of carbon bisulphide with the base formed by the reaction of less than two mols of hydrogen sulphide with one mol of a paranitroso body.—C. W. Bedford, Akron, Ohio, and Robert L. Sibley, Elizabeth, New Jersey, assignors to The Goodyear Tire & Rubber Co., Akron, Ohio. United States patent No. 1,532,646.

MANUFACTURE OF RUBBER GOODS. A small quantity of parabutyraldehyde is added to a rubber mix, the stock fabricated and vulcanized.—B. K. Brown, assignor to Commercial Solvents Corportation, both of Terre Haute, Indiana. United States patent No. 1,532,651.

The Dominion of Canada

COMPOSITE RUBBER AND LEATHER MATERIAL. Split leather having an imitation leather water-proof finish of superficially brominated rubber relatively cold vulcanized upon it.—The Canadian Consolidated Rubber Co., Ltd., Montreal, assignee of Allen G. McKinnon, Andover, Massachusetts. Canadian patent No. 248,298.

The United Kingdom

PROOFING FABRICS. Artificial silk fabrics or threads are coated or impregnated with waxes before proofing with rubber.—H. L. Rothband and Mandelberg & Co., Ltd., Pendleton, Manchester. British patent No. 227,527.

WALL COVERING. Sheet hard rubber used as wall covering, attached by rubber cement or phenol-formaldehyde condensation product.—V. Lefebure, 9, Glenloch Road, Hampstead, London. British patent No. 227,578.

FUEL FOR PORTABLE VULCANIZERS. A granular mixture of pulverized aluminum and sulphur and finely divided lead, to which iron may be added to act as a retarding agent. Combustion may be started by a match. Typical fuel mixtures, in parts by weight, are as follows: Sulphur 2, aluminum 1, lead 1; or sulphur 7, iron 5, aluminum 2, lead one-half.—R. H. Churchill, 4946 Irving Park Boulevard, Chicago, Illinois. British patent No. 227,717.

TREATED LINERS. Non-adhering cotton liners for use with sheets of tacky rubber, friction, etc., are made of woven fabric with a pebbled, glazed surface adapted to pocket air between itself and the tacky material. A suitable coating composition comprises pyroxylin, ethyl acetate, alcohol, benzol, and an oil softener, such as castor or other vegetable oil. A mineral filler such as kaolin may be added.—A. E. White, 88 Chancery Lane, London (B. F. Goodrich Co., New York, N. Y.) British patent No. 228,213.

MOLDING RUBBER. Crêpe rubber soling is combined with a layer of vulcanized rubber compound to control and regulate the shrinkage, the two layers being united by vulcanization of the latter using a low temperature accelerator which does not cause deterioration of the crêpe.—A. W. Briggs, Day and Night Rubber Mills, Market Harborough, Leicestershire. British patent No. 228,241.

Germany

Patents Issued with Dates of Issue

411,522 (July 27, 1921). Method of making accelerators. Catalin Limited, London. Represented by R. Heering, Berlin S. W. 61.

411,539 (June 3, 1924). Method of making rubber solution. A. G. Metzeler & Co., Munich.

412,060 (July 18, 1923). Method of making latex pastes. Dr. Ernst Hauser, Marienstrasse 7-9, Frankfurt-am-Main.

412,199 (September 26, 1923). Method of hardening condensation products of phenols and aldehydes. Firma Amalith Chemische Industrie, G. m. b. H., Dr. Leonhard Deutsch and Isah Thorn, Vienna. Represented by A. Elliot, Berlin S. W. 48.

412,259 (September 30, 1920). Method of vulcanizing rubber mixings. The Goodyear Tire & Rubber Co., Akron, Ohio, United States. Represented by F. Meffert and Dr. L. Sell, Berlin S. W. 68.

A. C. S. Rubber Division Meeting

THE sixty-ninth meeting of the American Chemical Society was held at Baltimore, Maryland, April 6-10, 1925. There was a large and representative attendance of chemists from all sections of the country and Canada. The programs of the various divisions were as usual of great scientific and practical interest. Numerous excursions afforded the chemists and their guests opportunities to inspect the points of historic, scientific and industrial interest in Baltimore and vicinity. A demonstration of modern artillery was held at Aberdeen Proving Ground, April 9, for the American Chemical Society. The program of the afternoon closed with a visit to the exhibition building for inspection of various types of artillery and automotive material.

The Rubber Division

At its business meeting the Rubber Division voted to contribute $100 to the endowment fund of the American Chemical Society. The following well known British and Dutch rubber research chemists were elected to honorary membership in the Division: H. P. Stevens, B. J. Eaton, and E. J. Van Rossem. No new committees were appointed.

The program of the Rubber Division Sessions included fourteen papers, all of much interest as shown by the well sustained attendance at the sessions of the division, averaging 125-150 chemists representing every division of the rubber industry.

Abstracts of Papers

Relation Between Adsorption Power of Clays and their Behavior in Rubber Compounds. When compounded in rubber stock, one type of clay gives good cures and tensiles, the other slow cures and inferior tensiles. The clay which is good for rubber usage adsorbs the smaller amount of dye from solution. Adsorption of different types of dye does not appear to follow the chemical relationship of molecular weights. The difference in clays is exhibited with various accelerators, and relationship between cure and amount of dye adsorbed in a standard method of measure is shown. The difference in clay behavior is very little in unaccelerated stocks. If the adsorbing power of clay is saturated, it behaves in a normal manner.—H. R. Thies.

The Absorption of Water by Rubber. A vulcanized rubber compound if soaked in water may absorb as much as 500 per cent water. The water vitally affects its electrical properties. The absorption is inherent in the rubber and is not produced by the compounding ingredients. Various factors are involved in the absorption. The effect of many latex coagulants on the rubber produced has been ascertained. The absorption is caused by the non-rubber constituents present in the rubber. Their removal in the preparation of pure rubber gives a product which does not absorb water.—J. T. Blake.

The Effect of Humidity in Rubber Testing. The humidity of the air to which a rubber stock is exposed either before or after cure has a decided effect upon the physical properties. High humidity before cure raises the modulus of the cured stock with some accelerators and lowers it with others. High humidity after cure lowers the modulus with all stocks. The effect is entirely physical, vulcanization coefficients showing no change.—R. B. Stringfield.

Comparative Tests on Sodium Fluo-Silicate Coagulated Rubber. A study of rubbers coagulated with acetic acid and sodium fluo-silicate. Sodium fluo-silicate retards the rate of cure in all mixes tried except those accelerated with litharge where the rate of cure is about the same. The original quality of the sodium fluo-silicate rubber at equivalent cures is somewhat lower on the average than that of the acetic acid rubber. Natural and artificial aging tests indicate that sodium fluo-silicate rubber is somewhat poorer in quality than acetic acid rubber.—C. R. Park.

Studies in Physical Properties of Rubber. II. A Micro Examination of Latex and the Structure of Rubber by the Use of the Kineo-Photomicrograph. In a micrographic study of latex and the mechanism of its coagulation, new evidence has been obtained relative to the shape of the latex particles, and their persistence after coagulation. The results have been recorded in motion pictures and in photomicrographs. The work of Hauser has been verified. The relation of these results to the probable structure of

rubber as outlined in a previous communication is indicated.—L. B. Sebrell, C. R. Park, and S. M. Martin, Jr.

The Effect of Milling on Rubber Stocks. 1. Long cold milling does not give such good pure gum stocks as short cold milling. 2. Long hot milling does not deteriorate pure gum stocks so much as long cold milling. 3. The best pure gum stocks, other things being equal, are made by short hot milling. 4. The tensiles and elongations of heavily compounded carbon black stocks are greatly improved by hot milling while the pigments are being incorporated into the rubber. 5. The increased tensiles and elongations are probably due to a better distribution of the carbon black.—Ellwood B. Spear and Robert L. Moore.

The Distribution of Carbon Black in Rubber Stocks. Stocks prepared by milling 20 per cent by weight of high grade carbon black into pale crepe at a temperature of approximately 105 degrees C. have a high tensile and a high elongation. Microscopic sections of these stocks, sufficiently thin to allow transmitted light to pass through at 1,500-2,000 diameters magnification, show the carbon black extremely well distributed. Very few particles and no aggregates of carbon black can be seen. The color of such sections depends upon the thickness and varies from yellow to reddish brown. These colors, the undertone of the carbon, are due to the fact that most of the carbon black exists in the colloidal state in the stock. Lampblack stocks treated similarly show none of these colors because the undertone of lampblack is blue. A method is described in detail by which very thin sections of rubber stocks may be made.—Ellwood B. Spear and Robert L. Moore.

The Ultra-Violet Microscope in the Study of Vulcanized Rubber Latex Globules. In this paper use is made of the fact that unvulcanized rubber allows the transmission of wave length .275μ, while vulcanized rubber absorbs it. This gives us a new method of attack for studying the distribution of the sulphur after it has combined with the latex globule.—Henry Green.

The Electrodeposition of Rubber. Rubber particles in natural latex (ammoniated) and in artificial rubber dispersions in water are negatively charged. In an electric field they move to the anode. It has been found possible to admix with latex or rubber-in-water dispersions, sulphur, pigments, and accelerators, and to electrically deposit rubber compounds, integrally, upon both metals and other materials to form coherent, homogeneous layers of considerable range of thickness. These deposits can be vulcanized according to any desired cure and vulcanization factor. The process can also be used to impregnate fabrics. The coatings can be deposited either in an adherent or nonadherent form, and be vulcanized on the support or independently. The character of the coating on metals is found to depend upon the (anode) over-potential for oxygen, control of which is therefore important. The process can be applied to the continuous coating of sheet, wire and fabrics.—S. E. Sheppard and L. W. Eberlin.

Effect of Accelerators on Cure and Quality of Various Rubbers. Data are given to show the correlation of the figures for cure and quality between different accelerators in the same type of mixing, and with a number of different rubbers. The variation, on the whole, is not great. Where a variation exists there is no apparent correlation between the behavior of different accelerators, or with any of these and a straight sulphur mix. Variability due to cure is greater than that due to quality. Variation in mixings with some accelerators appears to be higher than with others. An experimental procedure is outlined and a quality index figure developed, which is shown to be more reliable for a limited number of tests than tensile or tensile-product. A brief discussion of the causes of variation and the need for more extensive investigation is also presented.—A. O. Zimmerman and R. P. Dinsmore.

A Note on the Rate of Combination of Sulphur with Rubber in Hard Rubber Goods. Since the time of Carl O. Weber it has been known that the one chemical compound of rubber and sulphur which can be identified is that of the hard rubber compound $C_{10}H_{16}S_2$. In the theories which have been developed for the vulcanization of rubber and the relation of accelerators to this vulcanization very little mention has been made of the hard rubber field, which is the one place where it should be possible to obtain data which mean something. This paper is not intended as a discussion of the theory of vulcanization but some of the facts disclosed can be studied with advantage from this point of view. It is shown that a large quantity of sulphur can be combined with the rubber without a corresponding increase in tensile strength. Also, that certain chemicals which act as accelerators for soft rubber goods also act as accelerators for hard rubber and that in such cases the accelerator actively brings the sulphur to the rubber. There are other cases where the soft rubber accelerator does not seem to work for hard rubber.—W. E. Glancy.

Further Developments and Applications of the Oxygen Aging Test. The investigation of a wide variety of rubber compounds from different manufacturers indicates more than ever that several years of natural aging can be duplicated in a few hours by increasing the concentration of oxygen. The test has therefore become of great value in determining the influence on the aging of widely different ingredients, such as accelerators and antioxidants, and in turn the influence of the cure on stocks compounded with them. Practical difficulties limit the conditions, particularly the pressure and temperature, under which the test may be carried out, but it has been found that 300 pounds per square inch oxygen pressure at 60 degrees is a reliable index of the natural aging of a wide variety of compounds. Only by such standardization can the test be placed on a quantitative basis comprehensible to all, especially in respect to its possible application to specifications.—J. M. Bierer and C. C. Davis.

The Use of Bierer Oxygen Aging Test in Factory Control of Stocks. This paper deals with the many applications of this test as used in improving and controlling the quality of factory production. Among the uses described are: the selection of pigments and compounds; the improvement of rubber stocks, especially those of a cheaper class; the determination of proper cures; and the checking of cures in the factory. Numerous factory conditions and problems which can be helped by the oxygen aging test are given. Comparative data are also given, checking the experience of the authors of the test in various details.—J. D. Morron.

More Complete Evaluation of the Pigment Reinforcement of Rubber. The practice of measuring the physical properties of compounded rubber at a given pigment concentration is shown to be incomplete. To provide a most inclusive picture of pigment performance it is proposed to measure the reinforcing power of the pigment in question over the entire range of its useful concentrations. This is arrived at by measuring the total energy of resilience over the pigmenting range which is being studied.

This quantity is defined as the A function, the intensity factor of which is the proof resilience and the capacity factor, the volume concentration of the pigment.

ΔA function is defined as the excess of the A function over the proof resilience of the base mixing. It is the broadest index to pigment reinforcement. The A and ΔA functions are applied to published data and are shown to bear a relation to pigment particle structure, as well as to specific adhesional properties. Measured by the ΔA function, channel gas black shows markedly superior to all other existing rubber pigments.—W. B. Wiegand.

TENTH EXPOSITION OF CHEMICAL INDUSTRIES

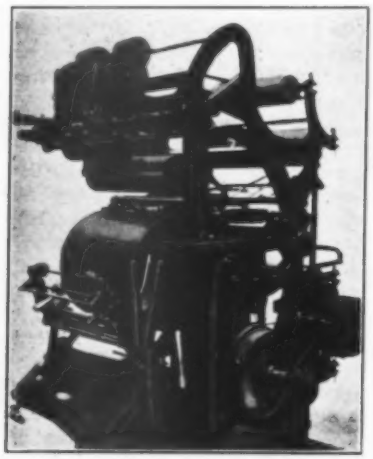
Elaborate plans are now in preparation for the Tenth Exposition of Chemical Industries to be held September 28 to October 3 at the Grand Central Palace, New York, N. Y. The exposition aims to furnish valuable information concerning rubber latex, crude rubber, vulcanizing processes, aging, compounding ingredients, and accelerators.

New Machines and Appliances

Machines for Building Flat Band Tire Casings

FROM the points of view of their mechanical superiority and reduced cost of production, tires built as endless flat bands possess distinct advantages which have popularized the method among tire producers. The method has been perfected by the development of special band building and expanding machines, two successful English built forms of which are here illustrated.

The band building machine is constructed so that all parts are readily adjustable for producing almost any section up to 8-ply on one machine. This adjustability permits dealing with the various widths of sections to be manufactured. Two separate feed rollers for supplying the cord fabric are fitted at the back of the machine, the accompanying lining winding off onto the big roller above the drum.



Gautier Tire Band Builder

With this machine each cord tire manufacturer is able to retain his particular methods as regards the direction of the cords in the various plies, and to use bead cores either in hoop or strip form. These are prepared in advance of their use. Locating the bead cores and the fabric covering them is done by the machine. Both edges of the casing band are trimmed at the same time by the trimming knives. The complete finished casing is removed from the building drum by an automatic remover. The machine is worked by one operator, producing 10 finished bands per hour ready for expanding.

The band expanding machine designed to accompany the building machine is automatic and adjustable to suit different sizes of tires whether clincher or straight-side. It consists of a table or gage plate, adjustable for height, and an expanding ring made up of a number of shaped segments.

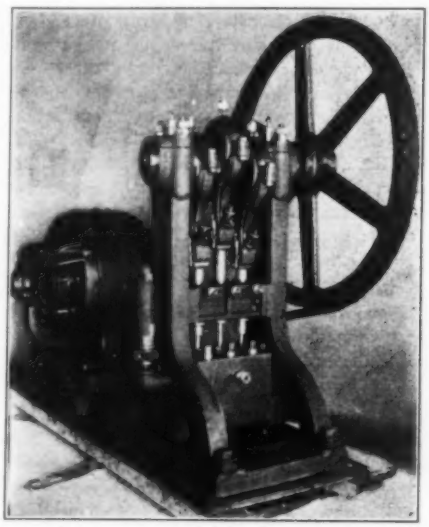
Gautier Band Expander

In operation, the flat endless band from the building machine is placed on the gage plate or table, and its center line adjusted to that of the segments. The ring of segments is made to expand to the required diameter, which is controlled by a cut-off or stop.

A single expander will handle several sizes of tires. The machine is made in three sizes which together cover the entire tire size range. They can be supplied, however, to any specification for ordinary, balloon or giant tires. The expander requires but ½ horsepower and 3 feet square floor space.—Gautier Process, Ltd., Glenville Grove, New Cross, London S. E. S.

Improved Hydraulic Pump for Lead Presses

The exacting importance of an uninterrupted supply of water at high pressure during the operating period has been met by the builders of the pump here illustrated, both in its design and the strength of its parts. It is built for supplying hydraulic power to lead extrusion presses used for covering cables, hose, etc.



Robertson Triplex Plunger Pump

The pump has a single triplex plunger and valve chamber of solid forged steel, and the plunger barrels and water passages are drilled from the solid metal. Non-rust material is used for the valve checks and seats. They are readily accessible for repairs or adjustment and the valve seats can be quickly removed. The packing chambers are 50 per cent deeper than in previous models and special molded expanding lip packing rings are used.

The plungers are of special non-rust steel, carried in plunger sockets having a large bearing surface on the center guide. The latter is made solid and fitted with removable bronze bushings. The driving shaft and eccentric rods are of open-hearth steel of large diameter. The eccentric rods are lined with phosphor bronze bushings. The pump frames are of heavy design properly supported on a rigid base with special extension for individual motor.

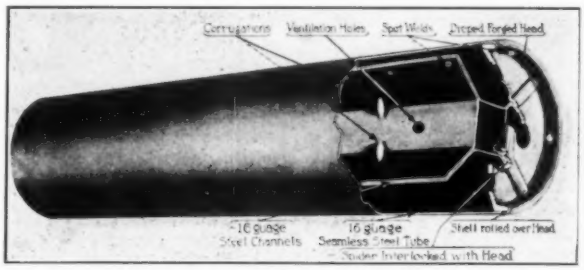
The power is transmitted to the pump by a Morse silent chain drive, and either a constant or variable speed motor may be used. In the latter case any desired volume of water can be obtained. This is very essential when the pump is used in connection with the extrusion of various sizes of products.

This pump is designed to operate at maximum speed of 100 revolutions per minute and is suitable for any pressure up to 10,000 pounds per square inch.—John Robertson Co., Inc., 133 Water street, Brooklyn, N. Y.

Superior Calender Stock Shell

Probably no item of calender and cutting room equipment is subjected to rougher handling than stock shells. Steel shells are justified on the ground of economy and durability. As the result of study and experiment the perfected steel calender shell here illustrated has been developed and meets the severest service tests.

It is built of seamless steel tubing with drop-forged heads and special angles. The four edges are machined before the angle



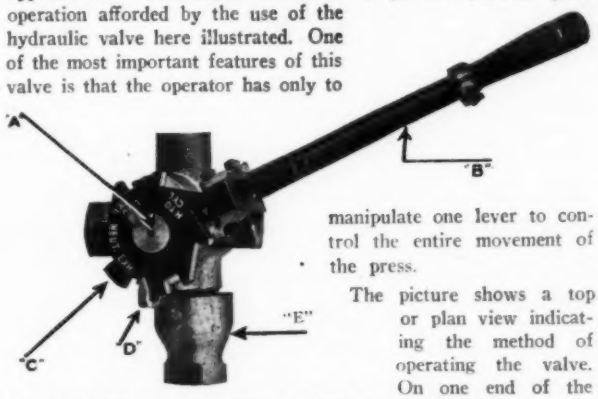
Perfected Calender Stock Shell

structure is pressed into the tubing, insuring uniform pressure and support. The angles are mounted on square bars during the process of welding, machining, etc., so that the alinement is perfect. The head has corrugated recesses which interlock with the spider, and with the tubing rolled over the end of the head forms a compact structure which cannot be separated under any strain of pulling or twisting.

One of the main features of the shell is that no distortion of the tubing and webs will throw out of line the square hole which the webs form. High standard of design, workmanship, and quality of material mark this shell as superior equipment.—The New Haven Sherardizing Co., Hartford, Connecticut.

Two Pressure Hydraulic Valve

Manufacturers of rubber goods and molded plastic articles will appreciate the advantages of better and quicker hydraulic press operation afforded by the use of the hydraulic valve here illustrated. One of the most important features of this valve is that the operator has only to manipulate one lever to control the entire movement of the press.



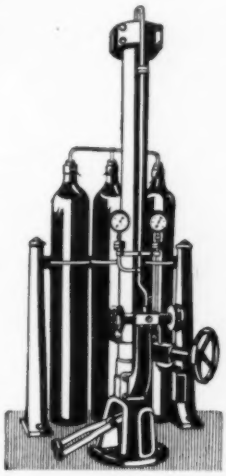
Yarnall-Waring Two-Pressure Hydraulic Valve

The picture shows a top or plan view indicating the method of operating the valve. On one end of the cylindrical valve plug A is mounted a ratchet lever B which turns freely. A notched cam plate C controls operation of the valve. The ratchet lever swings through 90 degrees when a 4-notch cam plate is used and 45 degrees when an 8-notch one is used. Pointer D attached to the valve body indicates on the face of the cam the exact position of the valve. The cam and ratchet give the desired sequence of operation, namely: (1) low pressure to cylinder, (2) neutral, (3) high pressure to cylinder, (4) neutral, (5) cylinder to exhaust.

To avoid leak of the high pressure into the low pressure system and consequent loss of pressure as well as inefficiency in low pressure operation, soft bronze sealing bushings are used on each port, which are ground in against the cylindrical plug to a tighter fit with each operation of the valve. In addition there is a check valve E on the low pressure inlet connection which prevents high pressure getting into the low pressure system if one of the sealing bushings should fail to function as intended.—Yarnall-Waring Co., Philadelphia, Pennsylvania.

Hydraulic Accumulator

The general arrangement of a new type of hydraulic accumulator is shown in the picture. The main features of this machine are: operation without shocks, economy in maintenance cost, power consumption on the hydraulic pump, and quicker working than is safely feasible with ordinary accumulators.



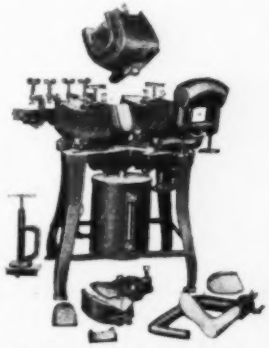
Compressed Air Accumulator

The accumulator consists mainly of two self-contained units. The cylinder containing the liquid, which is the one in front, and the one or several flasks where the compressed air is stored, the latter being under the same pressure as the fluid. An automatic gearing device for the by-pass valve on the accumulator cylinder itself controls the valve's movement in accordance with the amount of fluid drawn off and regulates the supply from the hydraulic pump.

When the accumulator is installed the system is filled from any available source of compressed air and the pressure is gradually built up as wanted. By a special valve arrangement the fluid cylinder acts as a compressor in conjunction with the hydraulic pump. This arrangement allows a much closer regulation of working pressure and one that can be changed as desired.—Werner & Pfleiderer Co., Sales Agent of the Baker-Perkins Co., 25 West Forty-fifth street, New York, N. Y.

Balloon Tire Repair Vulcanizer

The vulcanizer here pictured is a new model made on the correct circle and width of cavity to repair standard fabric or cord, oversize cord, and balloon tires. It will repair blow-outs from bead to bead, also do inner tube and rubber footwear patching, soling and heeling.



Miller's Model "M" Repair Vulcanizer

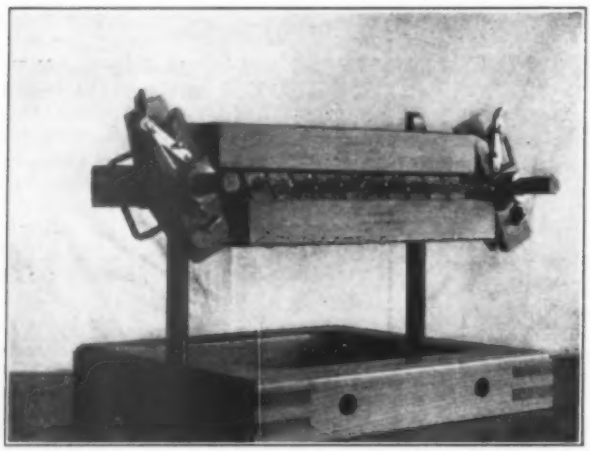
The vulcanizer consists of a base on 4 legs, a boiler and 4 mold seats. All mold equipment has the same size base so that molds of the same or assorted sizes can be attached at the same time. Each mold can be heated independently.

The vulcanizer can be operated on gas or gasoline, or can be furnished without boiler for connecting with steam line. The boiler is all steel with 12½-inch flues, making it easy to steam, strong and durable. The cavity and bead molds are accurately machined or ground.

The design of the vulcanizer offers a foundation plant to which molds, as needed, can be applied. Its 4-cavity capacity is economical of space and heat consumed and makes a very efficient equipment.—Chas. E. Miller, Anderson Rubber Works, Anderson, Indiana.

Beading Machine for Dipped Goods

Finishing dipped goods such as toy balloons, nipples, etc., by rolling back the edges while still uncured is known technically as beading. It is easily performed by hand although in large production various simple devices are in use for the purpose.



Grunwald Beading Machine

The illustration here shown represents a hand operated beading machine of German invention, adjustable to receive ten forms at a time each in its respective cavity. The rolling motion for forming the individual beads is imparted by operating the handles at either end of the mechanism.

This machine is patented and has been in successful use abroad for over a year, eliminating expensive hand work and turning out neater looking articles. With its aid even an inexperienced operator can turn out five times the output possible by hand in the same time.—E. Grunwald, 1 Lindenplatz, Pasing-München, Germany.

Sheet Rubber Dial Gage

The illustration represents an automatic micrometer dial gage for measuring the thickness of sheet rubber stock in thousandths of an inch up to 0.200 of an inch thick. Its indications are exact because it is built on the correct principle, no pinions, levers, or gears of any kind being used for transferring the action of the plunger to the reading indicator. The indicator hand is firmly attached to and is a part of the measuring plunger, thus insuring accuracy. It works easily and rapidly. In actual size the instrument measures 5¼ inches high, 3⅝ inches depth of throat, dial 6 inches in diameter. —E. J. Cady & Co., 549 West Washington Boulevard, Chicago, Illinois.

Cady Dial Micrometer

Machinery Patents

The United States

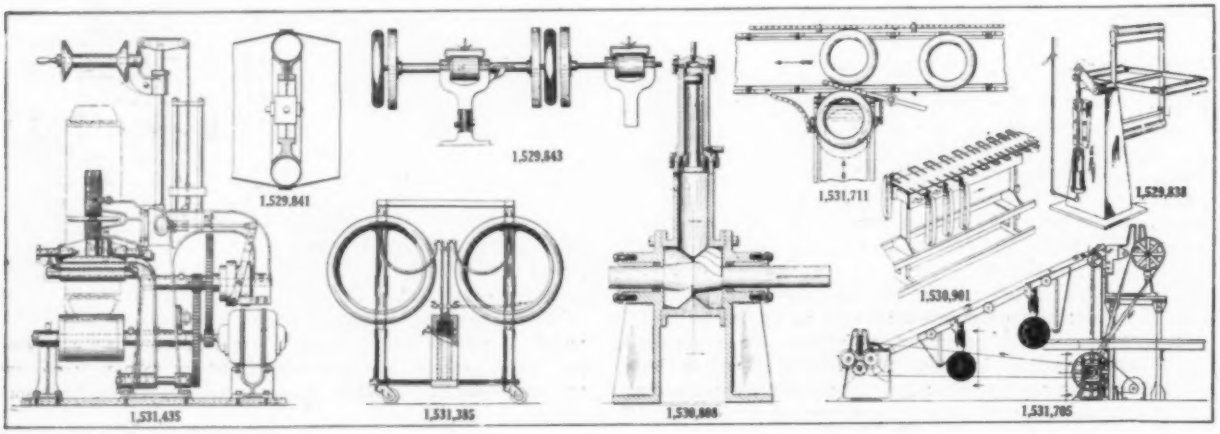
(1,529,838.) TIRE BUILDING APPARATUS. This apparatus is adapted for building pneumatic tire casings, particularly with reference to stretching endless bands of tire forming material before their incorporation in the tire structure.—Thomas P. Little, assignor to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts. United States patent No. 1,529,838.

(1,529,841.) TIRE BUILDING. Bands of fabric plies for tire building are placed about a contractable or deflatable core. The core is then inflated to a predetermined size and the fabric plies stitched down upon it in the usual manner.—M. A. Marquette, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts. United States patent No. 1,529,841.

(1,529,843.) TIRE BUILDING APPARATUS. The band of tire material is stretched around the core and expanded radially, the sides being pressed against the core by the pressure of yieldable inflated bags.—Thomas Midgley, Hampden, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts. United States patent No. 1,529,843.

(1,530,808.) RUBBER MASTICATOR. A single cylinder rubber masticator constructed with rotor in the chamber. The latter can be readily opened for rapid and thorough discharge of the mixed material.—D. R. Bowen and Carl F. Schmuck, assignors to Farrel Foundry & Machine Co., all of Ansonia, Connecticut. United States patent No. 1,530,808.

(1,530,901.) TUBE SPLICING MANDREL. The mandrel is sup-



ported while the ends of the tubes are being spliced and the tubes are suspended from a conveyor while the united ends are drying.—William J. McMillin and Daniel F. Hunt, assignors to Dunlop Tire & Rubber Co. of America, all of Buffalo, New York. United States patent No. 1,530,901.

(1,531,385.) APPARATUS FOR MAKING ENDLESS TUBES. Straight mandrel made semi-cured inner tubes are spliced, inflated on a rim and cured on a rack or truck in a dry heater while the desired pressure within them is maintained by a relief device.—John R. Gammeter and Abraham E. Falor, Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,531,385.

(1,531,435.) TREAD APPLYING MACHINE FOR SOLID TIRES. The tire is supported and rotated by a drum against which it is pressed, the tread strip being forced into contact with the hard base by the presser roll above it.—Fred D. Fowler, assignor to Hood Rubber Co., both of Watertown, Massachusetts. United States patent No. 1,531,435.

(1,531,705.) WINDING DEVICE. Machine for transferring severed strips from a cutting machine and for handling rolls of lining material or wound up strips.—Thomas P. Little, assignor to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts. United States patent No. 1,531,705.

(1,531,711.) TIRE CONVEYING SYSTEM. A combined horizontal and vertical belt conveyor system for tires.—Edward H. Marsh, Jr., assignor to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts. United States patent No. 1,531,711.

Other Machinery Patents

The United States

1,530,025 Mold for rubber shoes. C. L. Wilson, Johnson City, New York.
1,530,128 Process of and apparatus for making rubber tubes with tapered ends. L. A. Laursen, Eau Claire, Wisconsin.
1,530,255 Vulcanizing apparatus. W. Frost, assignor to Harvey Frost & Co., both in London, England.
1,530,843 Apparatus for repairing pneumatic tubes. J. M. Meredith, Jr., Norfolk, Virginia, assignor of one half to B. B. Shepard, Washington, D. C.
1,531,689 Cord-spacing device. M. Castricum, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.
1,532,228 Deflecting device for conveyor systems. F. S. Carpenter, assignor to The Hartford Rubber Works Co., both of Hartford, Connecticut.
1,532,274 Tire vulcanizing apparatus. W. J. Steinle, deceased, by William Steinle, administrator, both of Flushing, New York, assignor to The Hartford Rubber Works Co., Hartford, Connecticut.
1,532,396 Valve mechanism. J. R. Gammeter and W. D. Kmentt, both of Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y.
1,532,649 Fiber beating machine. C. P. Beiber, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.
1,532,660 Machine for making fibrous composition. I. D. Patterson, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.
1,532,694 Vulcanizing apparatus. W. A. Gwynn, assignor to S. E. Gwynn, both of St. Louis, Missouri.
1,533,126 Rubber tube cutting machine. C. B. Martin, Canton, Ohio.
1,533,139 Machine for trimming rubber heels. E. D. Putt and W. C. Stevens, both of Akron, Ohio, assignors by mesne assignments to United Shoe Machinery Corp., Paterson, New Jersey.
1,533,990 Tire opening machine. W. C. Hough, Cuyahoga Falls, assignor to The Firestone Tire & Rubber Co., Akron, Ohio.

The Dominion of Canada

247,760 Rotary cutter. The Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ontario, assignee of E. D. Putt, Akron, Ohio, U. S. A.
247,963 Flap-making machine. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, assignee of A. O. Abbott, Jr., Detroit, Michigan, U. S. A.
247,964 Vulcanizing system. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, assignee of A. O. Abbott, Jr., Detroit, Michigan, U. S. A.
248,299 Wrapping machine. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, assignee of H. Z. Cobb, Thornton, Rhode Island, U. S. A.
248,300 Drying apparatus. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, assignee of J. G. Coffin, Hempstead, Long Island, New York, U. S. A.
248,301 Machine for preparing coated strips. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, assignee of E. E. Clements, New Haven, Connecticut, U. S. A.
248,302 Apparatus for manufacturing tire casings. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, assignee of A. O. Abbott, Jr., Detroit, Michigan, U. S. A.
248,321 Machine for making pneumatic tire covers or casings. The Dunlop Rubber Co., Ltd., Regent's Park, London, assignee of C. Macbeth, Birmingham, Warwick, England.
248,531 Apparatus for unwrapping and stripping inner tires. The Firestone Tire & Rubber Co., of Canada, Ltd., Hamilton, Ontario, assignee of T. J. Smith, Akron, Ohio, U. S. A.

Germany

Design Patents Issued with Dates of Issue

899,388 (January 28, 1925). Device for attaching rubber heels. Eduard Hoting, Oldenburg i. O.
899,525 (December 16, 1924). Machine for cutting crêpe rubber soles. Robert Schomburg, Beaumontstrasse 9, Erfurt.
899,845 (January 27, 1925). Spreading machine. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.
899,908 (June 14, 1924). Tubing machine. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.
900,856 (January 26, 1925). Apparatus for vulcanizing air tubes. Willy Westphal and Peter Frings, Gustav-Freytagstrasse 36, Leipzig.
900,873 (February 5, 1925). Vulcanizing mold for rubber dipped hollow goods. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.
901,503 (May 27, 1924). Device for making profiles on solid tires. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

Patents Issued with Dates of Issue

410,629 (May 28, 1924). Device for making designs on solid tires. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.
410,884 (January 22, 1924). Spreading machine. Albert Boecler, Malmö, Sweden; represented by: K. Specht, Hamburg 1.
411,046 (July 18, 1923). Winding machine for fabric cutters. Ajax Rubber Co., Inc., New York; represented by: M. Löser and O. H. Kncop, Dresden.
411,712 (June 2, 1921). Machine for making tire covers. The Firestone Tire & Rubber Co., Akron, Ohio, United States. Represented by F. Schwenterley, Berlin S. W. 11.

Process Patents

The United States

1,530,009 Method of vulcanizing tire casings. F. G. Neal, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.
1,530,410 Method of manufacturing baseball centers. M. B. Reach, Chicopee, Massachusetts, assignor to A. J. Reach Co., Philadelphia, Pennsylvania.
1,531,504 Process of making articles of plastic sheet material. F. T. Roberts, Philadelphia, Pennsylvania, assignor to Paramount Rubber Consolidated, Inc., Tuckahoe, New York.
1,531,505 Process of making articles of plastic sheet material. F. T. Roberts, Philadelphia, assignor to Paramount Rubber Consolidated, Inc., Tuckahoe, New York.
1,531,763 Process for making variegated cross-mottled rubber flooring. J. H. Stedman, Braintree, Massachusetts.
1,532,383 Method of manufacturing rubber heels. J. E. Cleland, assignor of one-half to Harry W. Lucas, both of Montreal, Canada.
1,533,563 Method of reforming golf balls. S. Maggi, Chicago, Illinois.
1,533,609 Method of making tube protectors. F. B. Pfeiffer, assignor to the Star Rubber Co., both of Akron, Ohio.
1,533,611 Rubber-insulated condenser and method of making it. W. K. Respess, St. George, N. Y., assignor to New Jersey Research Co., a corporation of New Jersey.

The Dominion of Canada

247,899 Process for treating rubber latex. E. Hopkinson, New York, N. Y., U. S. A.
248,435 Process of making inner tubes. C. H. Semple, Yardley, Pennsylvania, assignor of one-half to The Lee Rubber & Tire Corporation, New York, N. Y., both in U. S. A.

The United Kingdom

227,153 Method of making rubber faced tiles and blocks. G. O. Case and Novocretes, Ltd., 1 Regent street, London.

Germany

Patents Issued with Dates of Issue

411,121 (November 14, 1923). Method of coating rubber articles, particularly rubber balls and toys. Firma Ungarische Gummiwaarenfabriks, A.-G., Budapest. Represented by Dr. W. Karsten and Dr. C. Wiegand, Berlin S. W 11.
411,423 (September 2, 1924). Process for making rubber tires. Deka Pneumatik, G. m. b. H., Berlin.
411,444 (March 11, 1923). Method of making elastic webbing. Firma Oskar Skaller A.-G., and Wilhelm Sponholz, Johannisstrasse 20-21, Berlin.
411,711 (February 27, 1924). Process and apparatus for making cellular pneumatic tires. T. B. McLeroth (Tubes), Limited, London. Represented by F. Schwenterley, Berlin, S. W. 11.

The Editor's Book Table

Book Reviews

"EFFECT OF TWIST ON THE PHYSICAL PROPERTIES OF A Number 7s Yarn." Technologic Paper of the Bureau of Standards, No. 278, Department of Commerce, Washington, D. C.

THIS investigation was made to determine the most suitable twist for manufacturing the yarn to be used in the Pima post office bag investigation and it is thought that the tabular and graphical relations studied will be useful to the cotton manufacturer.

"RUBBER LATEX: ITS PROPERTIES AND THE DEVELOPMENT of Its Industrial Applications." By A. Van Rossem, London, Central House, 46 and 47 Finsbury Square, E. C. 2, 1925. Paper, 32 pages, 5 by 7 inches.

This is a reprint of a valuable review of the nature of rubber latex, its coagulation and industrial applications, given as a lecture before the London Section of the Institution of the Rubber Industry in joint meeting with the London Section of the Society of Chemical Industry.

New Trade Publications

"THE SOUTH AMERICAN WEST COAST—AN ECONOMIC AND Financial Survey of Chile, Bolivia, and Peru, 1925," is a booklet of 71 pages, published by the Commission on Commerce and Marine of the American Bankers Association, New York, N. Y.

"THE A B C OF SAFETY SWITCHES—WHAT THEY ARE, WHY They Are Used, How to Apply Them" is a comprehensive and well-illustrated little catalog being sent out by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania.

THE CRUDE RUBBER & FOREIGN PRODUCE CORPORATION, 250 West 57th street, New York, N. Y., F. R. Henderson president, is publishing its annual series of charts, which furnish in concise and graphic form a representation of the status of the rubber trade and allied industries. The fifteen colored charts are arranged in a handsome black leather binder.

A SERIES OF WELL-ILLUSTRATED BULLETINS IS BEING ISSUED BY the American Hard Rubber Co., 11 Mercer street, New York, N. Y., six of these, bound in loose-leaf and pamphlet form, having the following titles: "Hard Rubber Centrifugal Pump"; "Hard Rubber Pipe and Fittings"; "Hard Rubber Utensils"; "Ace Quality Hard Rubber Tanks"; "Hard Rubber Reciprocating Pumps, Double Acting"; and "Ace Quality Hard Rubber Reciprocating Pump, Double Acting."

THE THIRD REPORT OF THE EXECUTIVE COMMITTEE OF THE Rubber Research Scheme (Ceylon) includes an account of the organization's proceedings during the past year, representing the work of various committees as well as a financial statement, and a general summary of the principal technical work accomplished.

A BROADSIDE FOR THE USE OF DEALERS AND A COPY OF THE "Mohawk Messenger" have been received from The Mohawk Rubber Co., Akron, Ohio.

Recent Articles Relating to Rubber

Accelerator BB. The curing and aging effects of BB accelerator.—Anonymous, *India Rubber Journal*, March 14, 1925. Graphs and tables.

Note on the Determination of Friction of Rubber Hose. Description of a device for use with the Schopper testing machine to determine and record friction grip of duck ply hose.—R. Houwink, *India Rubber Journal*, March 28, 1925, 498-499. Illustrations and graph.

The Determination of Paraffin Wax in Rubber Goods. Comparison of methods of analysis published previous to 1916 with those published since, including methods of Martens, German Electro-Technical Society and improved modifications by the author.—J. Lagerquist, *Journal of the Society of Chemical Industry*, 157T—162T.

Some Difficulties of Mechanical Rubber Goods Manufacture. These are classified and discussed under the following headings: (1) Mixing. (2) Making up, calendering, forcing and making up proper. (3) Vulcanizing, under and over curing, finish of articles and sulphuring up.—A. Ryan, *India Rubber Journal*, April 4, 1925, 535-538.

The Influence of Inorganic and Organic Vulcanization Accelerators on the Temperature of Rubber Mixings During Vulcanization. Serial. German.—F. Kirchhof, *Gummi-Zeitung*, April 3, 1925, 892-895. Charts and tables.

Containers and Means of Transporting Latex. Glass containers are asserted to be superior to metal cans for small shipments. For large amounts a satisfactory and economical method is still to be developed.—R. Ditmar, *Chemiker-Zeitung*, 49, 5-6 (1925).

The Problem of Vulcanization, II.—The Vulcanization of Rubber and the Aging of Its Vulcanizates as Gel Reactions. Theory of the chemical and physical changes which occur in the vulcanization of rubber and its subsequent aging.—H. Feuchter, *Kolloidchemische Beihefte*, 20, 78-137 (1924).

Production of Surface Effects on Rubberized Textiles. German. Methods for plain coating without designs. Coating with designs or printed textiles.—*Gummi-Zeitung*, March 13, 1925. Diagrams.

Investigations of the Coagulation of Latex. A review and discussion dealing at length with the general physical and chemical phenomena of the coagulation of rubber latex.—R. Audubert, *Revue Générale des Colloides*, 2, 321-8, 353-61 (1924).

Molecular Refraction of Natural and Methyl Rubber. A. D. Macallum and G. S. Whitby, *Transactions of the Royal Society of Canada*, 18 Section III, 191-3 (1924).

Study of the Aging of Rubber Mixtures. An artificial aging test gives results similar to natural aging only when certain mechanical and physico-chemical properties of the rubber mixture show the same progressive changes under either condition. As a basis for such comparison a systematic study was begun of the progressive changes in rubber under both natural and artificial conditions with respect to its thermic cycles, deformation, inductance and its sensitivity to ultra-violet light and chemical reagents. The specific properties so far studied in detail include the permeability to gases, the elongation cycles under stress, the dampening of torsion oscillations, the specific inductance in a high-frequency alternating field, the dielectric polarization and the resistivity.—J. Villey and Vernotte, *Revue Générale Caoutchouc* 1, No. 6, 10-11.

Pneumatic Tire Elements and Development. Brief description of latex, rubber and vulcanization preliminary to that concerning the structural features and their assembly into ordinary and balloon tires.—L. J. D. Healy, *Journal of the Society of Automotive Engineers*, April, 1925, 321-6.

The Coagulation of Hevea Latex with Organic Bases. C. Pelizzola, *Giornale di Chimica Industriale ed Applicata*, January, 1924, 10-11, and *Rubber Age*, New York, March 25, 1925, 402.

The Determination of Sulphur in Mixtures of Crude or of Vulcanized Rubber.—V. C. Butroni, *Giornale di Chimica Industriale ed Applicata*, November, 1924, 535-6, and *Rubber Age*, New York, March 25, 1924, 404.

Accelerators Old and New. The amines, nitroso compounds, aldehyde amines, thioureas, guanidines, dithiocarbamates and

thiuram-disulphides.—E. R. Bridgewater, *Rubber Age*, New York, March 25, 1924, 405-6.

Vulcanization and Accelerators. Part II. Natural and mineral accelerators. Serial. André Dubosc, *Rubber Age*, New York, March 25, 1924, 408-9, April 10, 1925, 23-4.

Determination of the Viscosity in Acidified Benzol.—Dr. O. de Vries, *Archief voor de Rubber Cultuur*, February, 1925, 276-293. Tables, English summary.

Vulcanization at Low Temperature with Organic Accelerators.—G. Pellizola, *Le Caoutchouc et la Gutta Percha*, March 15, 1925, 12577-12579.

Variation in the Dispersion of Latex Preserved with Ammonia.—Dr. R. Ditmar, *Le Caoutchouc et la Gutta Percha*, March 15, 1925, 12579-12580.

A New Ready Reckoner for Rubber Men. This determines cost prices, lists French and English compounding ingredients, densities, inverses of the densities and multiples of these inverses.—Albert Hutin, *Le Caoutchouc et la Gutta Percha*, March 15, 1925, 12591-12593.

Plasticity Determinations in Crude Rubber.—Dr. O. de Vries, *Archief voor de Rubber Cultuur*, February, 1925, 223-259. Graphs, tables, English summary.

The History of Organic Accelerators in the Rubber Industry.—W. C. Geer and C. W. Bedford, *Industrial and Engineering Chemistry*, April, 1925, 393-6.

From the History of Rubber. I and II. Installments of the chapter on Rubber taken from an encyclopedia compiled by Dr. Johann Georg Krünitz and published in 1781 by Joachim Pauli, Berlin.—*Gummi-Zeitung*, March 20, 1925, 836-838 and March 27, 1925, 870-873.

Dealers' and Manufacturers' Tire Stocks, April 1, 1925

The Department of Commerce has now made its second semi-annual survey of the stocks of automobile tires and inner tubes held by dealers in the United States, and the official statistics for April 1 as compiled by the Rubber Division of the department are now available in fairly complete form. The compilations below show an increase in stocks for April as compared with October, although rubber experts claim that this condition is normal and indicates the seasonal trend of the trade in connection with the spring dating system. It is believed that there are approximately 100,000 tire dealers in the United States.

DEALERS' STOCKS OF TIRES

	April 1, 1925			October 1, 1924		
	Number	Dealers Reporting	Average per Dealer	Number	Dealers Reporting	Average per Dealer
Total casings.....	2,026,356	32,592	62.2	1,402,879	26,161	53.6
Balloon casings...	144,433	9,745	14.8	**135,366	**8,305	**16.3
Inner tubes	3,317,104	32,477	102.1	2,197,553	27,480	79.9
Solid and cushion tires	47,958	2,381	20.1	54,558	*	*

*Number of dealers reporting solid and cushion tires in October not available.

**Balloon casings figured for October, included semi-balloons; for April the balloon casings include only those for 20, 21, and 22 inch wheels.

Manufacturers' Stocks of Tires

The existence of larger present stocks in the hands of manufacturers than in April, 1924, must be considered in connection with the decreased stocks in the hands of dealers. The following statistics were prepared from reports of manufacturers by the Rubber Association of America, Inc., which estimates the statistics to represent 75 per cent of the tire manufacturing industry.

MANUFACTURERS' STOCKS OF TIRES

	Automobile Casings	Inner Tubes
March 31, 1924.....	5,763,084	8,157,704
September 30, 1924.....	4,524,405	6,038,868
*March 31, 1925	7,072,853	10,936,359

*Preliminary statistics for March 31, 1925; final statistics not available.

Considering these statistics as representative of 75 per cent of the industry, manufacturers' stocks on March 31, 1925, were about 1,750,000 casings and 3,570,000 inner tubes larger than on March 31, 1924.

Interesting Letters from Our Readers

A Question of Bark Renewal

TO THE EDITOR:

SIR: I think that you would be interested to hear that some of the estates in the Malay Straits are beginning to find that rubber which is planted on hilly ground, particularly at the top of the ridge where the soil is not of great depth and the wash from the rains is heavy, is beginning to show signs of dying out. This is not very apparent from the first tappings, but the bark renewal on these trees is slow and poor compared with the lower lying portions, and in some cases it is almost impossible to get sufficient bark renewal to continue tapping.

The estates are finding that they may get one or two bark renewals but not a third, and that practically after two bark renewals the tree is finished with.

This fact may have an important bearing on rubber production within the next few years, and should be interesting to the whole industry.

LONDON, England. RUBBER PLANTER.
April 18, 1925.

Thermatomic Carbon Not a Substitute for Carbon Black

TO THE EDITOR:

DEAR SIR: In the article, "Problems of the Smaller Tire Manufacturer," that appeared in your April issue, a tread compound was given using thermatomic carbon, which we cannot endorse as a suitable formula. This old style compound would normally contain twelve parts of carbon black, but half of it has been replaced with thermatomic carbon.

The point is, that thermatomic carbon cannot be used satisfactorily as a substitute for ordinary channel carbon black inasmuch as it is made from natural gas by an entirely different method and gives a soft flexible rubber mix and not a stiff one. The mistake originally made in marketing thermatomic carbon was just this identical mistake, namely, that it was offered as a carbon black and more directly as a substitute for ordinary channel carbon black. This led to considerable trouble and we desire to avoid the early impression left in the trade regarding thermatomic carbon.

Thermatomic carbon acts in a rubber mix very much like zinc oxide when one is substituted for the other on a volume basis; that is, one pound of thermatomic carbon should be compared with three pounds of zinc oxide in a mix.

New York, N. Y. ELWOOD B. SPEAR,
April 8, 1925. A. A. SOMERVILLE.

Non-Blooming Longer Lived Than Blooming Stocks

TO THE EDITOR:

DEAR SIR: In your issue of December 1, 1924, there appeared an article, "The Manufacture of Fruit Jar Rings," in which the opinion was expressed that "blooming" stocks were preferable and that it was not possible to produce uniformly "non-blooming" stocks which would age satisfactorily.

We are reliable manufacturers of rubber fruit jar rings and take exception to the statements referred to. We maintain positively that it is possible to produce "non-blooming" stocks of uniform quality suitable in every respect for jar rings, and our experience is convincing that "non-blooming" stocks are far longer lived than "blooming" stocks.

In fairness to all concerned, we trust you will print the above statement.

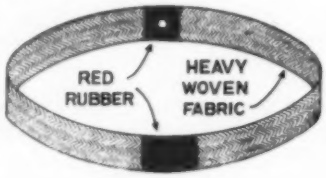
New York, N. Y. MANUFACTURER.
April 4, 1925.

"PNEUMATIC TIRES," BY HENRY C. PEARSON. An encyclopedia of tire manufacture, repair, rebuilding, machinery and processes.

New Goods and Specialties

Rubber and Fabric Flap for Clincher Rims

THE Colgan flap, made of sturdy fabric and with inserts of best quality red rubber, is made to fit on any make of small car with clincher rims. It stretches around the rim and serves to protect the tube from rust and pinching. It is made in two sizes, 30 by 3 and 30 by 3½, and is supplied to the trade in cartons of one dozen.—Colgan Tire & Rubber Co., Waycross, Georgia.



The Colgan Flap

"Double Strength" Bottle With Safety Handle

The special features of the molded, seamless "double strength" hot water bottle which the Tyer Rubber Co., Andover, Massachusetts, is marketing, include a smooth red stock with highly polished finish, extra heavy at neck and walls. The wide neck and special safety handle add to the general appearance and eliminate the possibility of burns while filling. The capacity is 2½ quarts. A similar combination syringe with the usual fittings is made under the same brand.

Pneumatic Acid Pump Employing Rubber

The illustration shows a pneumatic pump employing a hand bulb for creating air pressure, and an acid-proof rubber taper plug which fits into the neck of the carboy, by means of which it is possible to fill bottles with small neck openings without the use of a funnel. The plug also prevents the escape of fumes. By the use of the hand bulb it is claimed that generation of a dangerous air pressure inside of a glass container is obviated and the transfer of the device from one container to another is facilitated. The capacity of the pump is approximately two gallons per minute, the stream of acid being smooth and absolutely free from spurts. In use the bulb is squeezed, forcing the air into the carboy through the valves; this in turn forces the liquid out through the lead pipe, which reaches to the bottom of the carboy. When it is desired to stop the flow a relief valve is pressed upward, which permits the air to escape. The lead overflow pipe has no connection with the valve body and when withdrawn no acid remains in it. It also serves as a gage showing the amount of acid left in the carboy.—Thompson Manufacturing Co., Meadville, Pennsylvania.

Thompson Pneumatic Acid Pump

Illuminated Toy or Advertising Balloon

This device consists of a tubular holder with screw thread on one end to receive the miniature Edison screwed socket bulb, the other end of the tube being similarly threaded to receive the specially constructed plug which combines a central conductor fixed to the screwed plug in an ebonite insulating bush. This makes contact with the center point of the lamp through a small brass disk fixed to the end of the wire. The main portion of the plug is a rubber washer which makes an air-tight joint when screwed home. The tubular holder is of the right diameter to fit tightly in the standard sizes of inflating neck of the ordinary toy balloon, and when this neck is pulled down over the tube the pressure of the stretched rubber makes an air-tight or gas-tight joint.

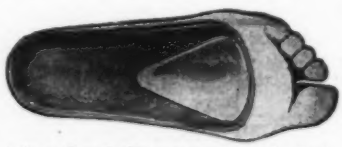
The Falkner Illuminated Balloon

In use the holder complete is inserted in the neck of the balloon, which is worked down to the flanged part of the tube, leaving the holes free inside the balloon. With a balloon approximately 60 inches in circumference the lift of hydrogen will cause the balloon and fitting to float in the air, providing an attractive effect for decoration or advertising.

The inventor states that the cost of production is very small, and negotiations for development in the United States are solicited. —James Falkner & Co., Ltd., 159 Victoria street, London, England.

Transversal Arch Pad for Calloused Feet

The "Nerv-Ease" transversal arch pad illustrated is designed to correct the tendency to callous formation on the ball of the foot, by gently forcing the muscles and small bones of the foot back into their normal position. This straightens out the toes and consequently tends to relieve corns. The arch pad comprises a leather sole on which is cemented a rubber pad, triangular in form and thick at the broad end, under the ball of the foot, but thinning down toward the pointed end.—Sponge Rubber Inner Heel Co., Inc., Ridgedale Avenue, Whippany, New Jersey.



"Nerv-Ease" Transversal Arch Pad

"Hydro" Battery Filler

The battery filler illustrated is eleven inches long, the tip, which is of hard rubber, measuring 7¼ inches over all. The bulb is of soft flexible rubber and has a capacity of eight ounces. Its operation in filling batteries with distilled water or withdrawing acid from storage batteries is extremely simple. A standard package containing fifty of the fillers is supplied to the trade, while individual boxes are furnished for retail.—E. Edelmann & Co., 2332-56 Logan Boulevard, Chicago, Illinois.

Battery Filler with Hard Rubber Tip

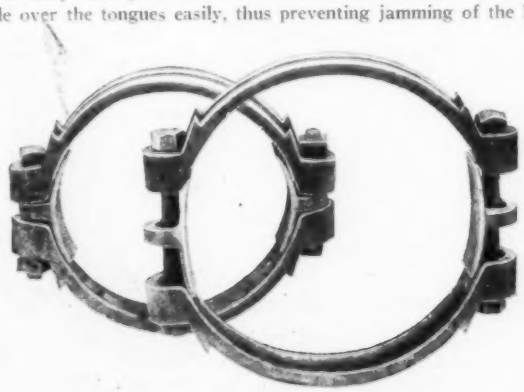
Rubber Vacuum Cup for Reducing Flesh

The Vaco Reducing Cup illustrated works on the suction principle, holding the flesh firmly while a rotary motion imparted gives a manipulation which increases the circulation of the blood through the part under treatment and loosens the fatty congestion. A special pressure regulator makes it possible to have as brisk or as gentle a massage as desired, and a curved-lip formation around the edge aids in the manipulation. The manufacturer claims that the Vaco Cup not only reduces superfluous flesh in spots wherever it may seem necessary, without affecting the rest of the body, but may be used to aid in the elimination of waste from the body by a special kneading motion of the abdomen.—The Thompson-Barlow Co., Inc., 132 West 31st street, New York, N. Y.

Vaco Reducing Cup

Double Bolt Hose Clamp

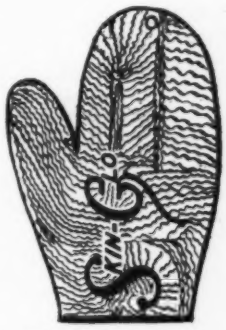
Due to the design and construction of the "King" Double Bolt hose clamp illustrated, it can be attached quickly, will hold securely, and does away with the need of oversize clamps. It is made of malleable iron, in sizes for hose from 4 to 12 inches, inclusive. The long "saddle" is provided with a double tongue, which keeps it in place on the hose. The half sections of the clamp slide over the tongues easily, thus preventing jamming of the hose and giving adequate clamping strength whether the clamp extends ½ or 2½ inches over the tongues of the saddle. Long heavy bolt lugs are set low on the clamp sections, distributing the strain uniformly. Any size of clamp can be adjusted to hose of wide variance in diameter.—Dixon Valve & Coupling Co., Emerald and Hagert streets, Philadelphia, Pennsylvania.



Eight-Inch "King" Clamp Closed and Open

Bath Mit of Crêpe Rubber

A recently marketed device which the manufacturer claims will eliminate blackheads, banish "that scaly look," cleanse the pores of dust, powder, rouge, etc., and impart a healthy glow to the skin is a crêpe rubber mit which when used in connection with a good soap will create a kind of suction massage. The vacuum plus the cleansing qualities tends not only to remove the grit and grime from the hands of the mechanic but to preserve "that schoolgirl complexion" so highly prized among women, says the manufacturer.—Skin-Glo Laboratories and Manufacturing Co., Box 200, Chicago Heights, Illinois.



"Skin-Glo" Bath Mit

"Ascepto" Transparent Nipple

The Pierce-Roberts Rubber Company, Trenton, N. J., has added to its long list of druggists' sundries the Ascepto Transparent Nipple, molded of pure rubber, free from compounds or coloring matter, and packed in sanitary individual boxes. Being mold-cured this nipple holds up well under repeated sterilization without becoming soft or tacky, and does not collapse easily as if made of ordinary stock and cured in a vapor or by the cold method. Being transparent, impurities, such as curdled milk, may be readily seen. The nature of the rubber and the process of manufacture insure maximum strength and long life.—Robert J. Pierce, Inc., 80-82 Reade street, New York City, is acting as the sole selling agent for the product.

The All-Rubber Boot

A recent development is an all-rubber boot made without the conventional fabric reinforcement. This has been accomplished through the use of a formula containing 80 parts of micronex by weight to 100 parts of rubber, and by incorporating suitable emollients. By this process the cost of production is reduced, since besides the fabric a certain amount of labor is eliminated in the manufacture; weight is lessened; the boot is oil-proof and acid-proof and can be washed inside and outside, and the wear is from the outside only. The rubber in both soling and upper is extremely tough and resistant to abrasion, but if it should be cut or ripped in severe service it can be repaired just like an automobile inner tube. It is designed particularly for wear in creameries, abattoirs, garages, canneries, construction work, etc.—W. B. Wiegand, Kitchener, Ontario, Canada.

Wiegand "All-Rubber" Boot

THE GRAY GOOSE GOLF BALL MAY NOW BE HAD IN MESH MARKings and with identification numbers, each in its individual carton. Baker & Bennett, 873 Broadway, New York, N. Y., are distributers.

Rubber Half-Sole Attached at Home

A recently patented rubber half-sole which may be easily applied at home by means of a tube of special cement and small brush supplied with each pair of the soles, is claimed to give long wear and to afford a quiet cushion which absorbs the shocks in walking, as well as to keep the feet dry and to prevent slipping. The half soles are made thin so that it is not necessary to remove any of the leather of the shoe to apply them, and they do not come to the edge of the shoe at any point, so that the original appearance of the shoe is preserved. In construction the half-sole comprises layers of rubber, one of which has a vulcanizing agent incorporated in it, the vulcanization uniting the layers and extending through the bottom layer and terminating short of the upper surface of the top layer, the upper surface and adjacent portions of the top layer being unvulcanized, so that a uniform adhesion and firm attachment between all parts of the rubber half-sole and the leather sole is assured by an adhesive and air is entirely excluded. The name of the manufacturing firm has been changed from The Regal Rubber Co. to The Serton Rubber Co., U. B. Annex, Dayton, Ohio.

The "Sert-On" Half Sole

Rubber Stamp Circus and Farm Characters

A line of educational toys that are all-the-year-round sellers comprises rubber stamps delineating circus animals and "down on the farm" familiar characters, as well as brownies, clowns, Indians, et cetera. The rubber characters are mounted on wood, and the larger sets, in addition to the characters, crayons, inking pad and blank paper provided, contain a complete alphabet of ¾-inch capital letters, figures 1 to 0, and punctuation marks. The sets are supplied to dealers in cartons containing one dozen outfits of one size only. The manufacturers state that this is merely an addition to the line of rubber stamp products which they have been making for thirty years.—Superior Type Co., 3940 Ravenswood avenue, Chicago, Illinois.

Educational Rubber Stamp Outfit

New Spark Plug Employing Hard Rubber

A new spark plug connector has been brought to this country from France, known as the Broc spark plug terminal and connector.

The spark plug is provided with a ball headed terminal. This ball head can be inserted into the connector through a hole at the side, and the terminal then swung around the center of the ball so that its stem passes through a slot in the side of the connector. A spring pressed plunger within the terminal presses against the ball head and holds it in position. The wire or core of the high tension cable fastens to the plunger, which has a hole drilled through its end, and the insulated end of the cable is slipped into a hard rubber cuff or sleeve which screws over the metal connector.

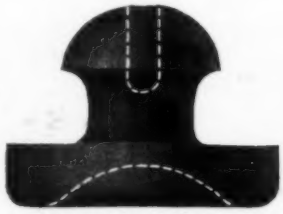
This type of terminal and connector is sponsored by Rene Gouiraud, and is said to be widely used by French automobile manufacturers, among whom are mentioned Citroen, Berliet and Peugeot

A New Color for Bathing Caps

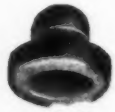
The Rubber Products Co., Barberton, Ohio, has introduced a new color for bathing caps, which it is claimed is the very latest Parisian decree. It is called oyster shell white and is a rich creamy gray white which blends well with any color or combinations of color in bathing suits. The caps are made according to the "No-Seam" molds of this company, in various designs and of first quality rubber.

Rubber Buttons Eliminate Hood Rattle

From 2 to 4 dozen of the Josco "Snap" buttons, the actual size of which is shown in one of the accompanying illustrations, are required to eliminate all the squeaks and rattles from the automobile hood. These are instantly applied, being snapped into place, and will fit any car. If a car is not fitted for lacing, 5/16-inch holes must be drilled at intervals of 3 to 4 inches. It is claimed that the buttons outwear old types of lacing and that in replacement only those buttons which show wear need be renewed.



Josco "Snap" Button



Actual Size

The same company is marketing a molded rubber hood strip of non-blooming black rubber, tough but resilient, to take the place of fabric hood lacing. It is instantly installed by means of the snap buttons, which fit into the regular lacing holes, and flat buttons on top of the strip reinforce the snap buttons. When the strip is applied the edge of the hood butts against the flange on the top of the strip, which gives a finished appearance and tends to make the hood watertight.—Jorgensen Specialty Co., Erie, Pennsylvania.

The Goodrich Zipper Boot in Many Styles

The Goodrich Zipper, the original automatic fastener gaiter, which is in its third year of popular service, is now made in a complete range of styles, all of which employ the distinctive feature, the hookless fastener. The style illustrated is entirely of rubber, with reinforcing strips so placed as to be decidedly ornamental. This boot is made in all sizes, for men, women, and children, youths and misses, and is guaranteed in every respect.—The B. F. Goodrich Co., 1780 Broadway, New York, N. Y.

Women's All-Rubber Zipper Boot

Interesting Items from Kleinert's

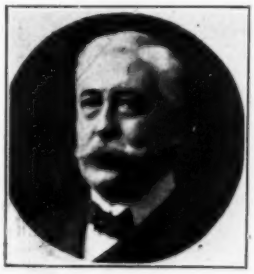
A beach robe made entirely of rubber, with rubberized English broadcloth trim, is being marketed by the I. B. Kleinert Rubber Co., 485 Fifth avenue, New York, N. Y. It is called the Kaigan Beach Robe and is made in six different colors and with bag to match.

Another interesting item is a rubberized cretonne shower bath curtain, which not only serves its utilitarian purpose but adds a vivid decorative note to the bathroom.

The Obituary Record

Prominent in Clothing and Footwear Industry

HONORABLE LEWIS D. APSLEY, president of the Firestone-Apsley Rubber Co., Hudson, Massachusetts, died at Colon, Panama, April 11, while on his annual southern trip accompanied by Mrs. Apsley. They left Hudson February 16, intending to visit Jamaica, Bermuda and other places, but had remained in Panama in the hope that Mr. Apsley's health, which was not of the best, would improve so that he might resume his journey.



L. D. Apsley

Lewis Dewart Apsley was born in Northumberland, Pennsylvania, September 29, 1852, and was educated in the public schools there. Following his own preference he left school at the age of sixteen and began his business career as a traveling salesman for cigars and tobacco in northern Pennsylvania. In 1876 he became assistant superintendent of the leather and rubber footwear department of John Wanamaker's Philadelphia store. The following year, however, he resigned and for eight years was a salesman selling rubber clothing, at first for the Hodgman Rubber Co., of New York, but later for the Gossamer Rubber Clothing Co., owned by the Conants of Boston.

In 1885 he associated himself with C. H. Coffin, another salesman for the Gossamer Rubber Clothing Co., and organized the Goodyear Gossamer Co. in Hudson, where a small rubber fabric plant was bought. Prior to this time gossamer clothing consisted of plain rubber surfaced goods, but Mr. Apsley at once began to produce garments which were not only serviceable but commended themselves to the good taste of the wearer. The better appearance of his tailoring, the superior quality of his patented "India cloths," and the extensive good will he had built up as a salesman in the trade resulted in an amazingly rapid growth of the business. Other companies were soon paying him royalties on his patents and he was made president of the Gossamer Rubber Manufacturers' Association of the United States, organized in 1888.

In 1892 he purchased Mr. Coffin's interest in the business, making himself practically sole owner, and changed the firm name to the Apsley Rubber Co. The manufacture of rubber boots and shoes was begun in 1900, and for twenty years thereafter this department grew and prospered under his personal management, resulting in considerable additions to the plant and operating force.

Meantime Mr. Apsley had become a leading spirit not only in Hudson but in the rubber industry. Through his efforts the 51st Congress placed a protective duty on imported rubber clothing, and in 1892 he was elected Republican Congressman from the fourth Massachusetts district. He sat in the 53rd and 54th Congresses and served on committees on agriculture, invalid pensions and labor. In 1894 he was chosen vice-chairman of the Republican Congressional Committee, and with Chairman Joseph W. Babcock two years later conducted the successful campaign that elected William McKinley president. With his contemporary congressman, the late Samuel W. McCall, he visited the Pacific Coast and their joint efforts were largely instrumental in lining up California and Oregon for sound money.

Following the 1896 campaign, Mr. Apsley retired from public life and devoted himself to his business and the rubber industry. In 1905 he was president of the New England Rubber Club, the forerunner of the Rubber Association of America.

Mr. Apsley was at various times identified with other business enterprises and was much interested in civic progress, serving for a time as president of the Hudson Board of Trade. He was president of the Woodward Manufacturing Co., a director of the Hudson Real Estate Co. and of the Hudson National Bank, was instrumental in forming a large corporation for the manufacture of leather shoes, besides organizing an electric light company which he sold to the town.

During the war the output of the Apsley plant was very largely devoted to government needs and Mr. Apsley personally engaged actively in much war campaign work. In 1920, at the age of 68, he sold the controlling interest in his business to H. S. Firestone, the firm name being changed to Firestone-Apsley Rubber Co., but Mr. Apsley continued as president until his death. During the past five years he had devoted much of each winter to travel in the South, California and abroad.

He was a Unitarian, a Mason, Odd Fellow, Knight of Pythias, Elk, Shriner and a member of the Grange. He was an enthusiastic golfer and also indulged in other sports. He had long been a member of the Boston Chamber of Commerce and was an honorary member of the Rotary Club. Among his friends he numbered many prominent men, including the late Senator Henry Cabot Lodge.

He is survived by his widow, whose maiden name was Abigail Forbes, and who was the widow of Victor Black; a nephew, Harriman Apsley Reardon, of Hudson, and a niece, Mrs. Harold Lacey of Philadelphia, Pennsylvania.

Energetic, democratic, philanthropic and hospitable, Mr. Apsley was known as an earnest advocate and staunch supporter of whatever tended to the growth and prosperity of the town of which he became the most distinguished citizen and was beloved generally by the townspeople and particularly by his loyal employes, whose welfare was ever close to his heart. His active and kindly interest and his genial presence will be long remembered and greatly missed by all so fortunate as to have known him. His passing is a distinct loss to the town of Hudson and to the rubber industry.

General Manager of Spreckels "Savage" Tire Co.

E. F. Norton, general manager of the Spreckels "Savage" Tire Co., San Diego, California, died suddenly in Los Angeles while making a business visit in that city. He had been associated with the rubber industry for the past twenty-five years, his connection with the Spreckels organization dating from 1923. Previously he had been in the employ of the By-Products Realization Co., of Chicago.

Since Mr. Norton's association with the first-mentioned company, and largely through his efforts, the factory output of tires and tubes has trebled in volume. Making arrangements recently to retire from business, Mr. Norton was also considering plans for taking a trip abroad with his wife. He was fifty-five years of age.

Seiberling Sales Promotion Editor

Harlan McDaniel, sales promotion editor since 1922 of the Seiberling Rubber Co., Barberton, Ohio, was killed on the evening of March 10 in an automobile accident while returning from Cleveland to Akron. Mr. McDaniel had formerly been associated with the Goodyear organization, where he had been connected with the sales promotion department, later becoming editor of the Goodyear Triangle. He is survived by his widow and a young son.

Widely Known Rubber Machinery Manufacturer

Christian Franz, head of the Franz Foundry & Machine Co., Akron, Ohio, who died on April 1 at the age of sixty years, was a native of Ohio. Born at Ashland, that state, on March 22, 1865, and educated in the public schools there, he entered the employ of the Erie Railroad in 1881, becoming agent at Akron in 1888. Of a mechanical turn of mind, he was attracted by the machinery needs of the rubber industry as he observed it growing about him, and in 1901 went to the Williams Foundry & Machine Co., of Akron, as secretary and treasurer, contributing greatly to the growth of that successful firm.

Christian Franz

In 1919 he organized his own company, known as the Franz Foundry & Machine Co., and in the short space of some five years had built it up to rank as one of the important producers of rubber mill machinery, especially tire building equipment. He was president and general manager until his death.

Mr. Franz had several other business interests. He was treasurer of the Mill & Mine Supply Co., of Akron, and at one time vice-president of the Ohio Wire Manufacturing Co. In 1922 he resigned as secretary of the Atlantic Foundry Co., after seventeen years in that position, and last year resigned as a director of the Mogadore Savings Bank after many years of service. He was a Mason, an Odd Fellow, and a member of the Portage Country Club.

RISE IN EXCHANGE AND THE PRICE OF RUBBER

It is interesting to note how much of the rise in crude rubber prices can be attributed to the advance in Sterling since November 1, 1922, the date at which the Stevenson restriction plan became effective in regulating the exportable allowance of British controlled plantation rubber. On that date Sterling was at 90 per cent of par, value $4.38, with ribbed smoked sheets quoted at 22¾ cents spot in New York city. On April 1, 1925, Sterling was at 98 per cent of par, value $4.77 and New York spot ribbed smoked sheets were at 41½ cents. The advance of exchange between the dates named was 39 cents; in other words, the value of a penny rose from 1.825 cents, November 1, 1922, to 1.945 cents April 1, 1925. The London spot price of rubber was 20¾ pence on the latter date.

The total advance in spot ribbed smoked sheets in New York between November 1, 1922, and April 1, 1925, was 18¾ cents a pound. Of this sum 2½ cents represents the advance in Sterling value between these dates.

The advance in Sterling naturally benefited the British exporter and likewise all importers of merchandise who purchased exchange at a low rate and used it at a higher one. Importers of rubber were no exception. Some of them made more money on exchange than on rubber, and many manufacturers profited thereby.

The Stevenson plan has no reference to rates of exchange. All countries engaged in international commerce benefit by the return of the pound to par. While America pays more for her rubber with Sterling at par she receives more for her wheat and cotton. Increased prosperity of the wheat and cotton growers means increase of their purchasing power, consequently stimulation of sales of automobiles and greater demand for tires, tubes and many lines of rubber goods at better prices.

DURING 1924 AMERICAN MANUFACTURERS OF BATHING CAPS exported 144,164 dozen, value $272,006.

A Handy Chart for Rubber Goods Dealers

What Is Your Gross Profit?

By W. F. Schaphorst

Here is a handy chart for the tire dealer for quickly computing gross profit. It may also be used to determine what the selling price should be, having decided upon the gross profit wanted. Many rubber dealers are of the opinion that when they buy a rubber article for $5 and sell it for $10 they make a profit of 100 per cent. That, however, is incorrect, because profits should be based on the selling price and not on the cost. The gross profit is therefore 50 per cent and not 100 per cent.

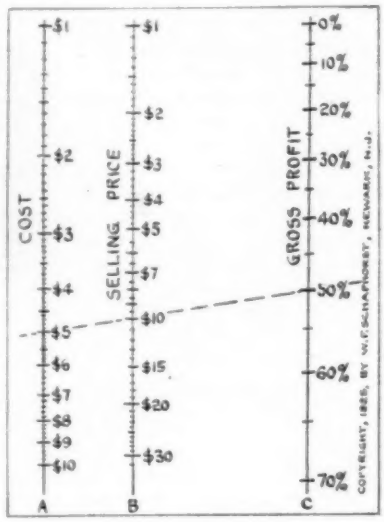


Chart for Tire Dealers

To determine the gross profit, find the cost in Column A and the selling price in Column B. Run a straight line through those two prices and the intersection with Column C gives the gross profit. Thus, in this chart the dotted line shows that if the cost is $5 and the selling price $10, the gross profit is 50 per cent.

Inversely, the chart may be used to determine the selling price. Thus, if the cost is $5 and if it is decided to make a gross profit of 50 per cent, connect the gross profit, Column C, with the cost, Column A, and the intersection with Column B gives the selling price as $10.

As will be noted, this chart is reduced to the utmost simplicity. No calculation whatever is required. The range of the chart is great enough to take care of almost any problem. By simply adding ciphers to the figures in Columns A and B the chart will take care of almost any amount. Thus, if the cost were $50 instead of $5, and the selling price $100 instead of $10, the same dotted line as shown on this chart would give the gross profit as 50 per cent. If the cost were $500 and the selling price $1,000, the same dotted line would give the result as 50 per cent gross profit. It must be remembered, however, that the same number of ciphers must be added in both Columns A and B. Thus, if one cipher is added to A, only one cipher can be added to B.

If it is desired to compute the gross profit "longhand" it may be done in this way: Subtract the cost from the selling price and divide by the selling price. The result is the gross profit.

To compute the selling price knowing the cost and having decided upon the gross profit, proceed in this way: Subtract the gross profit from 100 per cent and divide the remainder into the cost. The result is the selling price. For example, if the gross profit is to be 60 per cent and if the cost is $4 we have: 100 per cent minus 60 per cent equals 40 per cent; $4 divided by 40 per cent equals $10. Therefore, the selling price should be $10. It will be found that this checks correctly with the chart.

AMERICAN EXPORTS OF WATERPROOFED CLOTHING WHICH HAD A value during the year 1922 of $393,455 rose to $714,479 for the twelve months of 1924. The March shipment alone stood at $119,760, the value for May being $138,618.

News of the American Rubber Trade

Rubber Industry Outlook

TIRE companies in general have operated on liberal schedules thus far this year. They are expected to continue at full capacity until early summer to meet the requirements of motor vehicle manufacturers, and for replacement tires that will be consumed by the spring demands.

The report of the semi-annual survey of the Department of Commerce, showing a decline of about one-third in stocks of tires in dealers' hands compared with the same time last year, is taken as an indication that there is little danger of overproduction in the industry at this time.

Tire manufacturing in the United States is now conducted by 76 companies as compared with 276 in 1920. The weak companies withdrew or failed because outclassed in capital, equipment and efficiency. Their elimination benefited the industry by simplifying the situation.

The outlook for the strong tire companies is improving with the inceasing demand for large pneumatic and solid tires for bus lines and truck fleets for short haul freight lines.

The developments in transportation service signify great possibilities for tire companies competent to meet them. Bus lines seem destined to supplant very largely, if not completely, surface trolley systems for city and interurban traffic, while trucks will serve as branch feeders or collectors of freight for main rail connections. The proportion of large and heavy tires consumed in these public utility services, operating 24 hours a day as against the intermittent use of tires in private service, will multiply tire replacement business enormously.

The need for an early increase in tire prices forced by the steady advance in crude rubber is keenly felt by many companies. Firestone's tire increases of 5 to 15 per cent, effective May 1, will be followed by other companies. Higher prices, however, will stimulate low quality production and the flood of gyp tires that will result is not desirable.

In other important branches of the rubber trade, such as footwear, mechanicals, insulation, hard rubber, etc., conditions are fair and normal. Prices remain low in these lines. Under the circumstances the use of reclaims and ultra-accelerators is the best technical answer until prices are ultimately forced upward sufficiently to insure a fair profit on manufactured goods.

Financial

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Firestone Tire & Rubber Co....	Com.	$1.50 q.	Apr. 20	Apr. 10
Fisk Rubber Co.....	First Pfd.	$1.00	May 1	Apr. 27
Hood Rubber Co.....	Pfd.	$1.75 q.	May 1	Apr. 20
India Tire & Rubber Co.....	Pfd.	$1.75 q.	Apr. 1	Mar. 20
India Tire & Rubber Co.....	Com.	$2.00 q.	Apr. 1	Mar. 20
United States Rubber Co.....	First Pfd.	2% q.	May 15	Apr. 20

New York Stock Exchange Quotations

April 22, 1925.

	High	Low	Last
Ajax Rubber, com.....	13¼	13	13¼
Fisk Rubber, com.....	14⅝	13⅜	14½
Goodrich, B. F., Co., com.....	53½	51½	53¼
Goodrich, B. F., Co., pfd. (7).....	97¾	97¾	97¾
Goodyear Tire & Rubber pfd. (7)....	96½	95¾	96½
Goodyear Tire & Rubber, pr. pfd. (8)..	103⅞	103⅞	103⅞
Kelly-Springfield Tire, com.....	17⅝	16⅝	17
Kelly-Springfield Tire, 1st pfd.....	50⅛	50⅛	50⅛
Keystone Tire & Rubber, com.....	2⅛	2¼	2¼
Lee Rubber & Tire, com.....	12⅝	12⅝	12⅝
United States Rubber, com.....	41½	39½	40¾
United States Rubber, 1st pfd. (8)..	94⅞	94½	94⅞

Akron Rubber Stock Quotations

Quotations of April 20, supplied by Otis & Co., Cleveland, Ohio.

	Last Sale	Bid	Asked
Firestone com.	115	115	117¼
Firestone 1st pfd.	98½	98½	99
Firestone 2nd pfd.	98	98	99
General com.	237½	...	240
General pfd.	101	...	101
Goodrich com.	38½	...	...
Goodrich pfd.	95	...	...
Goodrich com. V. T. C.....	30	29¼	30¼
Goodyear pfd. V. T. C.....	93⅞	...	...
Goodyear pr. pfd. V. T. C.....	104¼	...	...
Miller com.	123	120	123
Miller pfd.	102	102	103
Star com.	8	...	...
Star pfd.	30	...	...
Swinehart com.	10	...	20
Victor Rubber com.	½	½	1
Victor pfd.	...	...	...

Annual Meeting of the B. F. Goodrich Co.

At the annual meeting of the stockholders of The B. F. Goodrich Co. held April 15, 1925, all directors whose term of office expired were reelected. Dr. W. C. Geer, who resigned as vice-president, will remain on the board of directors and serve in an advisory capacity. The stockholders voted to retire 23,760 shares of preferred stock.

Sales volume for the first quarter was about the same as the corresponding period last year. It is estimated that earnings are running at a satisfactory rate, largely due to the fact that the average cost of crude rubber consumed so far this year developed fair profits at present selling prices. Crude rubber has recently advanced to a definitely higher level and in order to maintain a fair margin of profit an increase in selling prices will be necessary.

No action was taken regarding resumption of common stock dividends as it was inexpedient to commence disbursements under the circumstances until a more substantial surplus had been accumulated.

Goodyear Textile Mills

The Goodyear Textile Mills, of Los Angeles, California, a subsidiary of the Goodyear Tire & Rubber Co., Akron, Ohio, netted a profit, after paying all charges, for 1924 of $225,893. This equals $11.80 on the outstanding preferred stock, as compared with $11.86 for 1923. The surplus was increased to $189,284 after the payment of $133,721 in dividends on the preferred stock. The company has completely discharged its obligation to the parent company, which had advanced funds for the payment of dividends on the preferred stock prior to the beginning of operations.

The Goodyear Tire & Rubber Company of California

Operations of the Goodyear Tire & Rubber Company of California, Los Angeles, for 1924 showed net income, after meeting all charges, of $1,915,947, an increase of 9 per cent over 1923, and being equal to $23.96 on the outstanding preferred stock, and compared with $21.80 for 1923.

The surplus, at the close of 1924 was $2,124,408, or a gain of 133 per cent within the year, and comparing with a deficit of $3,157,762 in March, 1921. The obligation of the company to the parent Goodyear Company in Akron was reduced from $5,343,654 on December 31, 1923, to $2,896,988 at the end of 1924.

Net sales for 1924 were $15,668,065, compared with $14,444,090 in 1923, and $12,392,616 in 1922. Earnings from operations, excluding sales of surplus lands, were $2,046,388 in 1924, compared with $1,470,950 in 1923.

At no time in 1924 did the company have any bank indebtedness, and cash on hand with call loans at the close of the year totalled $3,066,501. Ratio of assets to current liabilities was over 5 to 1.

New Incorporations

Ace Tire Sales Company, Inc.; March 14 (New Jersey), $100,000. Incorporators: Fred'k. H. Dressel, Jr., 135 Cantello street, Union Hill, George A. Dressel, 545 Gregory avenue, Weehawken, John H. Hagen, 219 Kane street, Weehawken, George L. Lockwood, 314 Bergenline avenue, West Hoboken, all in New Jersey. Principal office, No. 5061 Hudson Boulevard, North Bergen, New Jersey. John H. Hagen, registered agent. To manufacture, sell, import and export tires and rubber goods.

Haldane-Bierrie & Co., Inc., April 1 (New York), 1,000 shares, $100 each; 500 common, no par value. Incorporators: B. W. Smith, O. E. Holmes, D. J. Hilberg, all of 165 Broadway, New York, N. Y. Principal office, Manhattan. To handle rubber goods.

Master Rubber Corporation, April 6 (New York), $25,000. Incorporators: W. C. Russ, Foot of Court street, Astoria, Long Island, M. E. Howlett, Huntington Station, Long Island, and J. W. Winkler, 16 East 177th street, Bronx, New York, all in State of New York. Principal office, Huntington, Long Island, New York. To deal in rubber goods.

Joseph Miller, Inc., March 10 (Massachusetts), 1,300 shares, no par value. Incorporators: Joseph Miller, 1284 Commonwealth avenue, Allston, Harry J. Ferngold, 4 Price Road, Allston, Abraham Abelman, 60 Nightingale street, Dorchester, all in Massachusetts. Officers: Joseph Miller, president and treasurer, Edgar S. Hill, clerk. Principal office, Boston, Massachusetts. To manufacture and deal in mechanical rubber goods.

Motor Supply and Tire Co., January 24 (North Carolina), $100,000. Incorporators: Murray Allen, C. A. Richardson, Mrs. M. S. Cosgrove, J. S. Cosgrove and C. H. Cosgrove, all of Raleigh, North Carolina. Principal office, corner Willmington and Morgan streets, Raleigh, North Carolina. Tire jobbers.

National Products Corporation of America, April 16 (Delaware), 1,005,000 shares, par value $1. Incorporators: T. L. Croteau, A. L. Miller, and M. A. Bruce, all of Wilmington, Delaware. Principal office, Wilmington, Delaware. To manufacture and deal in rubber and gutta percha and goods of which they are component parts.

Rodic Rubber Co., March 7 (New Jersey), 1,500 shares, preferred stock, 8 per cent cumulative, par value $100, non-voting, and 5,000 shares of common stock, no par value, voting. Incorporators: William H. Rose, 109 Fairview avenue, Jersey City, New Jersey, Howard S. Neiman, 233 Broadway, New York City, Paul T. Krause, 667 Garfield avenue, Jersey City, New Jersey. Principal office, 667 Garfield avenue, Jersey City, New Jersey. To manufacture mechanical rubber goods.

Rubber Brokers, Inc., April 6 (New York), $1,000, par value $10. Incorporators: J. Gainey, 1610 University avenue, Bronx, F. J. Horn, 319 West 94th street, S. J. Pike, Jr., 1504 McCombs Road, Bronx, all of New York City. Principal office, 32 Broadway, New York City. Crude rubber brokers.

Sherrin-Harris Co., Inc., March 24 (New York), $4,000. Incorporators: Isadore Shapiro, 35 St. Nicholas Terrace, Alexander Bernardick, 66 Ft. Washington avenue, and Benjamin F. Schwartz, 146 Hayward street, all of New York City. To deal in tires.

Sibley Hose & Rubber Co., March 17 (Pennsylvania), $20,000. William M. Sibley, president. Narberth, William L. Booth, vice-president. Philadelphia, W. Paul Sibley, secretary-treasurer, Glenolden, all in Pennsylvania. Principal office, 26 North Fifth street, Philadelphia, Pennsylvania. To carry on a jobbing business in mechanical rubber goods and act as distributers of products of Electric Hose & Rubber Co.

Smith & Coutts Co., January 30 (Massachusetts), $15,000. Incorporators: George L. Smith, 51 Elm street, Andover, David L. Coutts, 52 Main street, Andover, Margaret E. Walsh, 15 Elizabeth street, Lawrence, all in Massachusetts. Principal office, Andover, Massachusetts. To manufacture and deal in paper, leather, rubber, cloth or textile fabrics.

Spencer Woolen Co., Inc., March 5 (Massachusetts), $25,000. Incorporators: Joseph Murray, Charlton, James H. McGill, Spencer, Henry J. McGill, New Park Hotel, Worcester, all in Massachusetts. Principal office, Spencer, Massachusetts. To manufacture and deal in rubber, cotton and all fibrous materials.

Standard Cord Tire Co., February 28 (New Jersey), $50,000. Incorporators: Albert Numbers, Norman S. Conover, M. E. Farlee, all of Trenton, New Jersey. Principal office, 147 East State street, Trenton, New Jersey. To manufacture and deal in automobile tires, tubes, etc.

Standard Tire Service Co., Inc., March 20 (New York), $15,000. Incorporators: Herman S. Davidoff and Ethel Davidoff, both of 98 Grand street, and Octavia Cleary, 94 Lancaster street, all of Albany, New York. Principal office, Albany, New York. To deal in rubber goods.

Winnerman Tire & Rubber Co., Inc., March 19 (New York), $20,000. Incorporators: Curtis Mechner, Sidney Felber and Paul Cohn, all of 1457 Broadway, New York, N. Y. To import and export rubber goods.

The Rubber Trade in the East and South

Rubber goods production in tires and inner tubes is proceeding on full schedule in the eastern factories, special efforts being directed to increase the output of balloon sizes now largely in favor with motorists. Reduction of tire and tube output is not expected until well into the motoring season. Other lines especially active are garden hose, agricultural hose, fruit jar rings, bathing caps and other seasonal goods. Proofers and makers of druggists' sundries and specialties are busy particularly on fabrics and colored gum sheet for the cutting up trade.

Footwear plants have reduced operations to four days weekly except in special instances. Mechanical and industrial rubber goods plants are fairly busy on belting, large hose, packing, etc. The rubber heel trade has been very much overdone, many poor quality goods have resulted from the excessive competition, while profits have been practically eliminated. The call for black molded soles has ceased and in its place the molded tan sole is being offered. One reason for the decreased demand for rubber heels is said to be the habit on the part of the general public of riding rather than walking on all occasions, which wears out tires rather than heels.

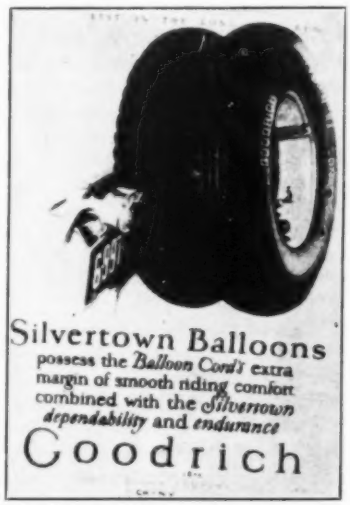
The plantation crêpe sole has been so strongly approved by golfers and tennis players that an active seasonal rush is now on to supply the need.

Plants engaged in insulating wire and cable making are operating on full schedule.

The Firestone Tire & Rubber Co., Akron, Ohio, will increase tire prices 5 to 15 per cent on May 1.

Goodrich Advertisement Transmitted by Telephotography

On April 7 appeared in *The New York Times* the first advertisement ever transmitted by the newly developed process of telephotography, as perfected by the American Telephone & Telegraph Co. The advertisement here shown was prepared in the Chicago office of The B. F. Goodrich Rubber Co., received in the telegraph office of *The New York Times* ready for printing in the newspaper just one hour and thirty minutes after it had been filed in Chicago.


Silvertown Balloons
possess the Balloon Cord's extra margin of smooth riding comfort combined with the Silvertown dependability and endurance
Goodrich

Goodrich Ad Sent by Telegraph

In the process of transmission, vacuum tubes, similar to those used in radio receiving, were utilized, although the transmission of the current itself was accomplished over telegraph wires. The sending and receiving of the Goodrich advertisement were both handled automatically by very sensitive mechanisms, and these machines are at the present time being installed in New York, Chicago, and San Francisco. The practical demonstration of the new process will mean much to the business world, and it represents a triumph in telegraphic development.

Hewitt Rubber Co. Under New Ownership

The control of the Hewitt Rubber Co., Buffalo, New York, has been purchased by J. H. Kelly and F. V. Springer. The sale was made by the executors for the estate of the late H. H. Hewitt, and confirmed by the court, April 13, 1925.

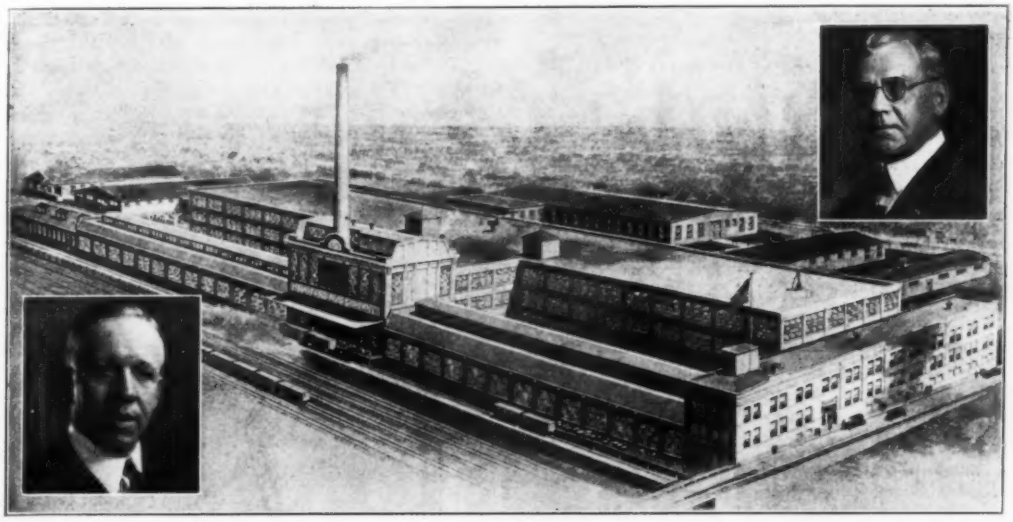
The new owners of the Hewitt Rubber have been identified with the rubber goods trade for many years, as successful manufacturers. Under the new control Mr. Kelly, who has been vice-president and general manager of the company since 1917, becomes president. Mr. Springer will be vice-president and general manager.

J. H. Kelly began his rubber experience with The B. F. Goodrich Co. in 1898 and in 1903 became connected with the Republic Rubber Co. in the sales division, rising to the position of vice-president in 1912 with entire charge of sales. He went with the Hewitt company in 1917.

F. V. Springer became connected with the rubber industry in

1905 in the Republic sales organization. At the time he left the Republic in 1917 to join the Hewitt organization, he was general manager of railroad and export sales.

The Hewitt Rubber Co. was founded in 1908 for the manufacture of air-brake hose and other railway rubber goods, and operates one of the finest and best equipped rubber manufacturing plants in existence. In plan it is a radical departure in rubber mill construction, yet a model of fireproof construction. It has been enlarged several times with the increasing demand for greater facilities for manufacturing and still preserves its special features of spaciousness and ample daylight illumination. All of its equipment is operated by individual electric drive, power for which is obtained from Niagara Falls. Coal is used for plant heating and vulcanizing. The products of the company are controlled by an elaborate testing laboratory under a competent scientific staff.



J. H. KELLY, President F. V. SPRINGER, Vice-President

Plant of the Hewitt Rubber Co., Buffalo, N. Y.

The manufactures of the company include automobile tires and tubes, and a full line of mechanical rubber goods and specification hose, packings, etc., for railway, naval, marine, mining and general industrial purposes. A large proportion of the trunk line railroads of the United States are its customers, as well as steamships, steel and mining companies, automobile manufacturers, construction contractors, oil and gas field operators, etc.

Eastern and Southern Notes

Dorris W. Whipple has resigned as president of the Keystone Tire & Rubber Co., and George A. Dorfman was chosen to fill the vacancy. Mr. Whipple will however continue as a member of the board of directors, and give his entire time to the manufacturing end of the business, which he has formerly handled in conjunction with the presidency.

The Panther Rubber Manufacturing Co., Stoughton, Massachusetts, has opened a branch office and warehouse at 93 Gold street, New York, N. Y. The organization's output includes rubber heels, soling, mats and matting, stair treads, and mechanical molded rubber goods.

C. A. Morse & Co., crude rubber brokers, have announced the removal of their offices to 91 Wall street, New York, N. Y.

A new export department, with offices at 42 Broadway, New York, N. Y., has been organized to handle exclusively the rubber products manufactured by Don E. Chapin & Co., Northport, New York. The latter concern has also gone into partnership with Lawrence A. Latour, who for the past ten years has been the New York export representative of the Firestone company. The Deco rubber products handled by the new firm will include automobile tires, rubberized aprons for all purposes, druggists' sundries, hydrometers, rubber novelties, etc.

Bowring & Co., 17 Battery Place, New York, N. Y., specializing in exporting, importing, and shipping, have announced the opening of a crude rubber department, under the management of Arthur W. Stedman, who is well known in the crude rubber industry.

Richman, Newburger & Travers, New York, N. Y., were the lowest bidders for supplying 30,000 dismounted and 2,500 mounted raincoats for the Army Quartermaster's Depot. Bidders furnished two prices for each of the mounted and dismounted styles, one at which the bidder furnishes all materials, the other providing the government furnishes the sleeve fasteners. Newburger & Travers bid $3.375 and $3.355, respectively, for the dismounted coats, $3.75 and $3.72, respectively, for the mounted; terms 1 per cent 10 days, ½ of 1 per cent 20 days; delivery to begin May 1 and be completed by August 15, f. o. b. New York.

The Great Falls Manufacturing Co., Rockingham, North Carolina, has appointed the Farish Co., 85 Worth street, New York, N. Y., as its sole selling agent for tire fabric, including lenos and chafers.

W. R. Kuhn succeeds H. B. Hankinson as manager of the branch of The Mohawk Rubber Co., 245 West 55th street, New York, N. Y. Mr. Hankinson has been called to the Akron office to assume the duties of national sales supervisor.

The Marlboro Cotton Mills, McColl, South Carolina, specializing in mercerized yarns and tire fabrics, have appointed the Farish Co., 85 Worth street, New York, N. Y., as sole selling agent for their products.

The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, specializing in electric controlling devices, has consolidated its two New York City offices. The new offices are located at 8 West 40th street. The company's New York City factory is at 144th street and Southern Boulevard.

Distribution of the Ault & Wiborg gritless rubber colors in the East has been taken over by the Ault & Wiborg Company of New York, 461 Eighth avenue, New York, N. Y. F. C. Batchellor, who is well known to the eastern trade, and who for-

merly represented the Cincinnati company in this territory, will be manager of the rubber color department for the East.

H. E. Neubauer, formerly assistant chief engineer of the Buffalo Foundry & Machine Co., and later vice-president of the O. S. Sleeper Co., Inc., has as chief engineer become associated with the Chemical & Vacuum Machinery Co., Inc., Buffalo, New York.

The Electric Hose & Rubber Co., Wilmington, Delaware, intends to increase its capitalization from $1,000,000 to $2,000,000, although no additional capital is to be issued at the present time. C. D. Garretson is president.

Sibley Hose & Rubber Co. has opened new offices and a warehouse at 26 North Fifth street, Philadelphia, Pennsylvania, and will carry a full line of molded and braided hose, as manufactured by the Electric Hose & Rubber Co., Wilmington, Delaware. The first-mentioned organization is headed by William M. Sibley, William L. Booth, and W. Paul Sibley.

The plant formerly maintained by the Allen Tire & Rubber Co., Allentown, Pennsylvania, was to have been sold at public auction on March 21, but the sale was not consummated because of insufficient bids. Henry D. Jordan and Harold W. Stimpson are receivers.

The Westinghouse Electric & Manufacturing Co., Pittsburgh, Pennsylvania, has received an order valued at $1,000,000 from the Carnegie Steel Co. for electrical equipment for the new steel mill at Homestead, Pennsylvania. This is one of the largest orders ever placed for electrical steel mill equipment.

George W. Daum, vice-president and general manager of the Pennsylvania Rubber Company of America, Inc., Jeannette, Pennsylvania, has returned from a business trip covering the Pacific Coast and the Northwest. Mr. Daum found business conditions much better than they were at this time last year.

Among the exhibitors at the Knitting Arts Exhibition, held in Philadelphia, Pennsylvania, during the second week of April were the following: American Society for Testing Materials, Cooper-Hewitt Electric Co., E. I. du Pont de Nemours & Co., and the National Aniline & Chemical Co.

Herbert M. Strachan has been appointed sales manager of the Pennsylvania Rubber Company of America, Inc., Jeannette, Pennsylvania. Mr. Strachan became associated with the company in 1917, and has served the company in various capacities, most recently having been manager of the branch at Baltimore, Maryland, and of the sales division at the factory.

The Worth Mills, Fort Worth, Texas, manufacturers of cord tire fabrics, are at present running full, and the night shift at 60 per cent of the plant's capacity. The new plant is designed for 20,000 spindles, although only 16,000 spindles are at present installed. Executives of the Worth organization include: Lloyd H. McKee, president; John P. King, vice-president; Rudy Copeland, vice-president and general manager; Floyd J. Holmes, vice-president; H. C. Meacham, treasurer; W. B. Decker, secretary; and Charles L. Harding, chairman of the board of directors. Harding, Tilton & Co., of Boston, are the selling agents.

BRIGHTON MILLS WILL OPERATE IN GEORGIA

Brighton Mills, Passaic, New Jersey, large manufacturers of tire fabric, have secured a site and plan to erect a mill at Shannon, Georgia, seven or eight miles north of Rome.

A special meeting of the stockholders held on March 31 approved the plans which call for the purchase of approximately 800 acres of land, the erection of modern mill buildings and a mill village, and the removal of spinning, twisting and weaving machinery from the Passaic plant sufficient to produce approximately 5,000,000 pounds of cord fabric per year.

The plans are well advanced, and contracts will undoubtedly be let within the next week or two. It is expected that production of fabric will begin about January 1, 1926.

The Rubber Trade in New Jersey

The various rubber manufacturing plants in New Jersey report business on the increase with one or two exceptions. There is a good demand for all lines of mechanical goods and concerns are receiving orders for fire and garden hose. Manufacturers of automobile accessories look for a brisk season in these goods. Leading in this line are battery jars, brake lining and rubber cloth for auto tops. There has been an increase in the manufacturing cost of tires at most plants. However, selling prices remain the same, with few exceptions. One concern advanced tires 5 per cent and tubes 10 per cent, while another advanced both tubes and tires 10 per cent. Others are holding back to see if there is going to be a general increase all around. There has been a decline in orders for some hard rubber goods, but this is expected at this season of the year.

New Jersey Notes

The Essex Rubber Co., Inc., Trenton, New Jersey, has completed a new two-story building which will be used for shipping, receiving, and warehouse purposes. The company's output includes mechanical specialties and rubber soles and heels. C. H. Oakley is president and general manager.

The Murray Rubber Co., Trenton, New Jersey, one of the largest tire manufacturing concerns in this section, reports that during March sales were larger than at any time during the company's existence. The plant continues to operate twenty-four hours a day with three shifts. Tires were recently advanced 10 per cent.

The Globe Rubber Tire Manufacturing Co., Trenton, New Jersey, on March 25 increased tires 5 per cent and tubes 10 per cent. The company continues busy and with good future prospects.

The Ajax Rubber Co., Trenton, New Jersey, is running at normal capacity and reports an increase of orders for tires and tubes.

The Combination Rubber Co., Trenton, New Jersey, has decided not to increase the price of tires and tubes until there has been a general advance by other factories. The company is very busy at the present time.

The Pierce-Roberts Rubber Co., Trenton, New Jersey, has begun the manufacture of a patented ignition protector for distribution caps on automobiles, and is producing about 300 daily. The company also reports a large demand for rubber bath sprays.

The Pocono Rubber Cloth Co., Trenton, New Jersey, is having success with its new products, and recently started to manufacture rubber tennis racket covers. The concern is now moving into the plant of the Lee Union-Alls Co., where two floors have been leased for the manufacture of golf and tennis goods.

The Central Transportation Co., Trenton, New Jersey, operating nineteen buses from Trenton to various parts of the state, has awarded a contract to the Central Tire Co., Trenton, New Jersey, for supplying Seiberling all-tread tires and tubes to the concern for the coming year. The buses cover more than 500,000 miles territory yearly.

Whitehead Brothers Rubber Co., Trenton, New Jersey, reports an increase in orders for all lines of mechanical goods.

According to the Vulcanized Rubber Co., Morrisville, Pennsylvania, there has been a falling off in orders for various hard rubber articles for radios and also on combs of different sizes. The company's other departments are running normally.

W. B. Wiegand, vice-president and general manager of the Canadian Goodrich Co., Ltd., Kitchener, Ontario, Canada, recently visited the Lambertville Rubber Co., Lambertville, New Jersey.

The Dickinson Cord Tire Corporation, 220-230 West 19th street, New York, N. Y., has purchased a plant at Nutley, New Jersey, in which will be manufactured automatic tire building machines, cord making and rubberizing apparatus, and also improved cord for use with these machines. F. S. Dickinson is president.

The Ace Machine Co., Inc., 517 East 32nd street, Paterson, New Jersey, manufactures mechanical rubber goods molds and special machinery required by the rubber industry. This new company, which has been capitalized at $125,000, aims to supply the needs of rubber manufacturers throughout the New Jersey territory. Angelo Givona and Charles Wilde are the incorporators.

On admission of Hugh J. Connelly, president of the Trent Rubber Co., Trenton, New Jersey, that the concern is unable to continue business, Judge Bodine in the Federal District Court appointed Charles F. McCoy receiver of the company. The land and buildings are valued at $115,000; machinery and equipment, $274,000; raw materials and goods in process, $30,000; tires and other finished products, $10,000; accounts receivable, $40,000; cash, $6,000. The liabilities are placed at about $473,800.

The Rubber Trade in Rhode Island

Chemical Equipment Exposition

A list, as yet only partially complete, of exhibitors preparing displays for the Chemical Equipment Exposition, to be held June 22 to 27 inclusive at Providence, Rhode Island, includes the following: Buffalo Foundry & Machine Co., Buffalo, New York; Carrier Engineering Corporation, Newark, New Jersey; American Hard Rubber Corporation, New York, N. Y., the United States Rubber Co., New York, N. Y., and the Bristol Co., Waterbury, Connecticut.

National Operating Day and Night

April 1 proved anything but an "All Fool's Day" for the employes of the National India Rubber Co., Bristol, Rhode Island. On that day, for the first time in more than a year, the Keds Division plant went on a full time schedule. Ten days later it was announced that beginning April 13 the shoe division would be operated on a day and night schedule, which would continue until some time in June. Also the edict that was made a year ago requiring out-of-town employes of the factory to become residents of Bristol has been modified and for the present, at least, will not affect employes who have homes in other places.

For more than a year the National company has employed approximately 2,000 operatives on a schedule of less than forty hours a week. The demands on the big rush order, however, have necessitated increasing the force as well as the hours. The majority of the nearly 500 persons have been added to the stitching department, and with the coming of the busy period of the normal year there are encouraging prospects that the plant will continue on full time indefinitely.

Rhode Island Notes

According to the annual statement issued by the Hope Webbing Co., Providence, Rhode Island, the company's surplus as of December 31, 1924, was $1,613,995. Narrow woven and braided fabrics, including elastic webbing, are manufactured by this organization.

The Fountain Tire Shop, 119 Fountain street, Providence, is owned and conducted by Joseph Reffkin, according to information filed at the city clerk's office.

INTERNATIONAL PURCHASING AGENTS' CONVENTION

A comprehensive program has been prepared for the tenth International Purchasing Agents' Convention and "Informashow," to be held in the Milwaukee Auditorium, Milwaukee, Wisconsin, from May 25 to 28 inclusive. Addresses of interest to both manufacturer and purchasing agent will be delivered, while some important questions regarding economy of operation are to be discussed.

The Rubber Trade in Massachusetts

Practically all the rubber plants in Massachusetts are running full time with large forces, and many mills, especially those in Malden, Chelsea, and elsewhere in metropolitan Boston, are running overtime. This is reflected in the activity of textile mills in Fall River and New Bedford supplying cotton fabrics to the rubber trade, which are correspondingly busy, although this does not apply to other branches of the textile industry.

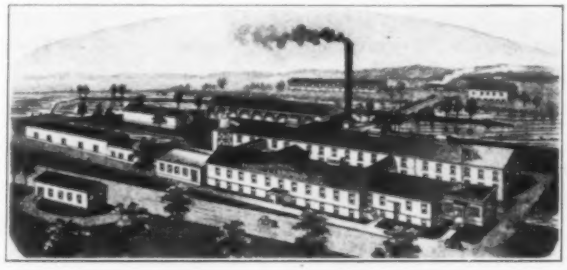
Footwear manufacturers are turning out large tickets of tennis lines for the summer trade, and rubber heel and sole production is large but at highly competitive prices, which requires volume output to assure adequate profits. Tire manufacturers are operating at capacity with the demand for balloon tires exceeding their most optimistic expectations. Replacement demand for high-pressure tires is active and still forms the bulk of the business. The rising prices of crude rubber and cord fabric leave little profit except to manufacturers who contracted well ahead for their raw materials at low prices, and an upward readjustment of tire prices sooner or later seems inevitable.

Mechanical goods plants are busy with seasonal lines and report a fair demand for general goods. Belting orders are especially good. Building permits indicate another big construction year with consequent activity in insulated wire plants, now particularly engaged on telephone and lamp cord. Flooring production is considerable but at narrowing profit margins, due to increasing competition.

Druggists' sundries and weatherproof clothing are seasonally quieter, and rubber sundries plants generally are operating on part time.

F. H. Jones and the Hamilton Company

The versatility of the thoroughbred rubber man is well exemplified in the case of Frederick H. Jones. For thirty-six years he was connected with the Tyer Rubber Co., Andover, Massachusetts, beginning as an office clerk and rising to the position of treasurer and general manager of that prosperous old concern, and becoming at the same time one of the recognized leaders of the American rubber industry. Having acquired a substantial interest



Plant of the Hamilton Emery & Corundum Co., Chester, Massachusetts

in the Hamilton Emery & Corundum Co., Chester, Massachusetts, he decided a couple of years ago to give that enterprise his chief attention, with the result that its business has been notably increased. Just as he won success as a rubber man he has been equally fortunate as a manufacturer of abrasives.

The products of the Hamilton company compare well with the choicest of similar articles made in the oldest European factories and include the coarser abrasives for wheels and for polishing purposes, as well as the higher grades used by dentists, jewelers, and opticians.

Incidentally, when rubber men see an Indian head trade mark with the words "Turkish," "Naxos" or "Abrasit" lettered above they will know that they view the products of "Friend Jones."

Firestone-Apsley "Lita" Gaiter

A paragraph in the article, "The Rubber Footwear Situation for 1925," that appeared in our April issue gave a wrong impression concerning the Firestone-Apsley "Lita" gaiter. This gaiter, which sells for $2.00 and not $1.90, has rubber friction lining and an inserted waterproof rubber intervamp, giving a 3-ply vamp construction.

Massachusetts Notes

By means of a circular letter, the Davidson Rubber Co., Boston, Massachusetts, explains its success in producing and selling its "Banner" line of rubber goods as follows: "In 1913 we made a great many items; today in 1925 we make but six. In 1913 we covered the country with salesmen; today we have none." The company claims that this policy has resulted in the production in 1925 of more and better rubber goods than were manufactured in 1913.

The New England Tire & Rubber Co., Holyoke, Massachusetts, maker of Holyoke tires, has filed an assignment for the benefit of its creditors, the assignees being Herbert W. Pattee, Walter W. Slack, and L. Alphonse Laporte. The company, established two years ago and capitalized at $3,000,000, has been distributing its products throughout the New England territory. According to Mr. Laporte, the treasurer of the organization, a meeting will soon be held representative of both creditors and stockholders, when the assignees will consider plans for the best interests of all.

According to the annual report of the Tyer Rubber Co., Andover, Massachusetts, for the year ended December 31, 1924, the company's surplus is now estimated as being $158,525.53. Executives of the organization include Myron H. Clark, president; Henry G. Tyer, vice-president; Walter E. Piper, treasurer; and George L. Lawrence, Jr., factory manager.

The products of the Hewitt Rubber Co., Buffalo, New York, control of which was recently acquired by J. H. Kelly and F. V. Springer, are distributed in New England by the Hewitt Rubber Co. of Massachusetts, at 48 Gloucester street, Boston. W. S. Carleton is president and treasurer and Joseph L. Whinton vice-president and New England representative of the Buffalo company. Considerable sale is anticipated in this district for the firm's new bus tire which is soon to appear on the market.

Production at the plant of the Boston Woven Hose & Rubber Co., Cambridge, is running ahead of advance calculations, almost all departments being fairly busy, with the belt department running about 25 per cent ahead of all previous records.

Statistics from the United States census of 1923, recently published, indicate that there were that year 40 more cotton mills in the country than in 1921, many of them producing tire fabrics. Half of the new mills were located in New England, nine of them being in Massachusetts. Eight new mills were credited to the southern states and twelve to the rest of the country. While the South boasted 753 cotton mills to New England's 353, credit for the largest mills and the greatest volume of output still goes to New England.

Plans for the big 1925 Boston Shoe and Leather Fair are already well under way, with the various committees actively functioning. The date is July 7 to 10, inclusive, and the exposition, as before, will be staged in the Mechanics Building. Both of the main halls will be devoted to booths exhibiting the latest products in leather, canvas and rubber footwear, leather, heels and soles and other accessories, and the spectacular Style Revue will this year have several entirely new features. Buford H. Jones, of the Thomson-Crooker Shoe Co., Boston, is chairman of the exhibits committee, and William H. Bresnahan, of the Bresnahan Shoe Co., Boston, heads the Style Revue committee.

H. S. Macomber & Co., Inc., 150 Milk street and 125 Portland street, Boston, are factory distributers of Norwalk tires and tubes and Overman cushion tires.

Vice-President in Charge of Fisk Production

Many a man, after years of roaming, returns finally to his native state bringing a foundation of rich experience on which to build his greatest successes. Such in brief is the life story of J. D. Anderson, vice-president in charge of production of the Fisk Rubber Co., Chicopee Falls, Massachusetts.

J. D. Anderson

Born "way down Cape Cod," at Chatham, Massachusetts, on September 10, 1870, he was educated in Chatham and Boston schools and graduated from Byrant & Stratton Commercial School December 16, 1886. The following day he entered the employ of Charles H. North & Co., Boston, where he remained nearly three and one-half years.

At that time the United States was in the midst of the bicycle craze. Everybody was riding, and Mr. Anderson became much interested in the possibilities of this new industry. In 1890 he joined the Pope Manufacturing Co., holding various positions in Boston and Hartford, Connecticut. His interest, however, shifted from the bicycle itself to the bicycle tire and in 1895 he went to the Hartford Rubber Works as secretary, since which time he has been prominently identified with the tire industry.

When the Hartford Rubber Works Co. was absorbed by the Rubber Goods Manufacturing Co., he held successively various official positions with subsidiary companies, including the presidency of both the Hartford company and the G. & J. Tire Co., Indianapolis, Indiana. Later, when the United States Rubber Co. got control of the Rubber Goods Manufacturing Co., he continued with the new owners, and when the United States Tire Co., a subsidiary, was formed in 1911 and the Hartford Rubber Works Co. was consolidated with it, he was made general sales manager and in that capacity supervised the large organization and traveled extensively throughout the United States and Europe.

In 1914 he resigned, and the following year went to the Fisk Rubber Co., Chicopee Falls, Massachusetts, on special work. Five months later he was made sales manager, and on March 27, 1916, was elected vice-president and made factory manager. On February 2, this year, he was elected vice-president in charge of production. This position includes supervision of three divisions, two of them being tire plants at Chicopee Falls, Massachusetts, and Cudahy, Wisconsin, respectively, and the third, the Ninigret Division, comprising four fabric plants located in Massachusetts, Rhode Island and Connecticut. Thus it will be seen that Mr. Anderson is not only, in point of service, one of the oldest tire men in the country, but occupies one of the most responsible positions in the industry.

At present he is president of the Tire & Rim Association of America, Inc., and a member of the Society of Automotive Engineers.

The Rubber Trade in Ohio

Open weather over the greater part of the country during the past month, coupled with generally sound business conditions, has greatly stimulated the demand for automobile tires, and consumption is reported more than 20 per cent in excess of last year's spring business. Although the majority of Akron factories are operating at capacity, some are having difficulty in meeting the needs of their dealers and distributers. This is particularly true of balloon tires and large size tires for commercial vehicles.

The only disturbing element in the situation, from the standpoint of the manufacturer, is the fact that tire prices are at present far out of line with the cost of crude rubber and other raw materials. Crude rubber has more than doubled in cost, while cotton fabrics are considerably higher than prevailing levels six or eight months ago. Despite this increase in the cost of manufacturing, tire prices have remained stationary. The reason is that manufacturers had large stocks of rubber, purchased at the low prices of last summer. Most of this supply has been used up and a number of factories have been forced to buy rubber around 44 cents a pound for immediate needs.

Executives are frank to say that a fair margin of profit cannot be made on the basis of present crude rubber costs, unless tire prices are advanced. Most of the rubber companies earned satisfactory profits last year and during the first quarter of 1925, but the second quarter of the year is not expected to be as good, despite the big volume of business, because of the higher manufacturing costs.

The statement of Harvey S. Firestone, president of the Firestone Tire & Rubber Co., that high prices for crude rubber would cost automobile owners more than $100,000,000 this year is taken as an indication that he would not oppose an upward revision of tire lists. Mr. Firestone has generally been a leader in any price readjustment in the industry, and most of the other manufacturers have been waiting for him to start the ball rolling to relieve the present situation. Mr. Firestone blames the British rubber restrictions for recent rubber advances.

While production has been speeded up all along the line in the tire factories, the biggest increase has been noted in balloons and bus and truck tires. Although new equipment has been added and additional factory space provided, several companies report they are still behind in filling orders for balloon tires.

Practically all rubber factories in the Akron district are working night and day, with two and three shifts in operation. Production schedules have not changed appreciably from last month, continuing around 120,000 tires a day. An average production schedule of about 100,000 tires a day was maintained during 1924.

Business volume during the first quarter of the year surpassed that of any period since the post-war boom of 1919 and 1920. Some companies in fact have enjoyed greater prosperity than in any similar period of their history.

Competition in the industry is keen, however, and only those companies are successful which practise strict economy and are efficient in manufacturing methods.

W. O. Rutherford on Cooperation

W. O. Rutherford, vice-president of The B. F. Goodrich Co., Akron, Ohio, who recently attended a meeting at Washington, D. C., as a member of the Contact Committee of the Automotive Industry, urged close cooperation between the heads of industries and government officials.

"In one case," he said, "cooperation between the Rubber Association and the Department of Commerce helped to avoid periods of curtailment in the tire industry. Through the resulting ability of the industry to maintain a uniform production, a program of marked economic benefit has bettered conditions in the trade to such an extent that the public has gained many material advantages in the way of tire quality and price.

"The Department of Commerce is at present making a survey of tire stocks in dealers' hands. On the basis of this information the manufacturers and dealers can gage the possible tire consumption within the next few months, and the danger of over-production in the industry will be thus avoided."

Tire and Rim Association Holds Annual Meeting

The Tire and Rim Association of America, Inc., 1401-02 Guarantee Title Building, Cleveland, Ohio, held its annual meeting on April 8, when the following officers for the coming year were elected:

President, J. D. Anderson, The Fisk Rubber Co.; vice-president, W. B. Minch, Jaxon Steel Products Co.; treasurer, H. W. Kranz, Cleveland Welding & Manufacturing Co.

The board of directors for the coming year includes: J. D. Anderson, The Fisk Rubber Co.; C. C. Carlton, Motor Wheel Corporation; B. Darrow, Goodyear Tire & Rubber Co.; W. Y. Duncan, Lee Tire & Rubber Co.; J. E. Hale, Firestone Tire & Rubber Co.; E. G. Hulse, Kelly-Springfield Tire Co.; W. J. Kirkpatrick, A. Schrader's Son, Inc.; H. G. Jackson, Wire Wheel Corporation; H. W. Kranz, Cleveland Welding & Manufacturing Co.; Ford Lawrence, Kelsey Wheel Co.; W. B. Minch, Jaxon Steel Products Co.; Paul Pleiss, Budd Wheel Co.; S. P. Thacher, United States Rubber Co.; J. C. Tuttle, The B. F. Goodrich Co.; J. H. Wagonhorst, Hayes Wheel Co.

Firestone Advances Tires

The Firestone Tire & Rubber Co. notified dealers on April 28, of a 5 to 15 per cent tire increase, effective May 1. A 10 to 15 per cent increase was announced in solid tires, 10 per cent in tubes and 5 per cent in straight side pneumatics and balloons. Other companies will doubtless meet these increases.

Ohio Notes

While The B. F. Goodrich Co., Akron, Ohio, is turning out more than 25,000 tires a day, even greater gains have been made in the rubber footwear and mechanical goods lines. There is also a better margin of profit in these products. The Goodrich directors took no action on the resumption of common dividends at their last meeting. However, their policy in desiring to build up a substantial surplus before starting dividends is regarded as sound financial reasoning.

The Miller Rubber Co., Akron, Ohio, is turning out in the neighborhood of 10,000 tires and 12,000 tubes a day. Sales volume has been considerably greater during the first quarter of the year than in the same period of 1923. Business has also shown a large increase in the druggists' sundries and novelty lines manufactured by the company.

W. H. Hackett has been appointed assistant secretary and treasurer of The Miller Rubber Co., Akron, Ohio. Mr. Hackett became connected with the Miller company in June, 1923, and has since been serving in various capacities.

W. H. Hackett

H. H. Matz has been made assistant treasurer of the Mohawk Rubber Co., Akron, Ohio, succeeding B. J. Brooks. The latter, as treasurer of the organization, will devote especial attention to the credit and accessory sales departments.

D. A. Grubb is now connected with The Star Rubber Co., Inc., Akron, Ohio, as vice-president in charge of sales, and he has also been elected a director of the Star organization. Mr. Grubb was formerly secretary and sales manager of the India Tire & Rubber Co., of which organization he was one of the original founders eight years ago.

W. F. Goff has been named superintendent of the American Rubber & Tire Co., Akron, Ohio, succeeding M. C. Mechlin.

Both the General and India tire and rubber companies of Akron, Ohio, are behind in filling orders from tire distributers and retail dealers. These companies are doing the biggest business in their history in supplying large size tires for commercial vehicles, particularly in the bus field. Neither India nor General handles any original equipment business, but devote their attention to replacement business exclusively.

A. G. Maranville recently was appointed as sales engineer for the Aeronautical Sales Division of The B. F. Goodrich Rubber Co., Akron, Ohio. He will be associated with Henry Wacker, director of Aeronautic Sales, at the Goodrich offices in Akron.

Business of the Lambert Tire & Rubber Co., Akron, Ohio, has increased four times over that of last year. This company is a pioneer in the cushion tire field, and has become an important factor in the industry. A new power house is being completed at the plant, and additional trackage facilities are being built.

The American Rubber & Tire Co., Akron, Ohio, reports a big demand this year for its line of rubber sandals for use on bathing beaches. The company is producing about 500 tires a day.

Production is to start May 15 in the Akron Rubber Reclaiming Co. plant, located in the old Barber block house factory. The company will carry on a general rubber reclaiming business. B. O. Etling is president; W. O. Hart, secretary; and C. E. Bishop, vice-president and factory manager.

H. S. Quine, publicity manager of the General Tire & Rubber Co., Akron, Ohio, has just returned here after a two months' sales promotion trip. He reports business generally good and conditions excellent for the tire business.

Business conditions in Europe are "spotty," according to B. G. Work, president of The B. F. Goodrich Co., Akron, Ohio, who is back after a four weeks' trip abroad. He found conditions better in England and Germany than in France, where business, he said, was bad. Operations of the British Goodrich Co. are satisfactory, and better profits will be shown this year, Mr. Work stated. The Continental Co. in Germany, in which Goodrich is interested, is doing well.

"The most noteworthy thing about the automotive business abroad is the leaning toward the balloon tire," said Samuel Broers, manager of the export department of the Firestone Tire & Rubber Co, upon his recent return from Europe. Although the political situation is far from satisfactory, sure progress is being made toward stabilization with a resultant recovery in business.

The Domestic Rubber Co., Barberton, Ohio, has installed new equipment for the production of fountain syringes, water bottles, bathing caps, and other rubber sundries. The executive personnel have had much experience in the manufacture of druggists' sundries. These officials being: C. C. Schutz, E. J. Schutz, J. M. Wylie and J. B. Chisnell.

The Rubber Products Co., Barberton, Ohio, is at present on a three-shift schedule. The company manufactures bathing caps, rubber gloves, hot water bottles and tubing. T. G. Richards is general manager.

The petition for a receivership for the Mt. Vernon Rubber Co., Mt. Vernon, Ohio, has been withdrawn, and the case dismissed. The present directors of the Mt. Vernon organization are making every effort to put the factory into operation.

The Tuscan Tire & Rubber Co., Carrollton, Ohio, reports operations at a higher rate than for some years past. The organization claims to be the first and only concern to produce union-made tires, the union shop policy having been inaugurated last January. M. T. Anderson, the general manager, was formerly sales and merchandise manager of the Better Tires Co., of Chicago, Illinois.

Executives of The Dayton Rubber Manufacturing Co., Dayton, Ohio, state that the past year represented the best period in the organization's history for volume of business, while the present year is leading 1924 by a substantial margin, with excellent prospects ahead. E. B. Self is advertising manager.

The Cleveland Equipment & Engineering Co., Swetland Building, Cleveland, Ohio, purchased in January the entire equipment of the Armor Cord Tire Co., Morgantown, West Virginia, later selling the machinery to various rubber companies.

C. W. Hamilton has announced his resignation, effective April 15, as assistant general manager of The Victor Rubber Co., Springfield, Ohio. Mr. Hamilton was in charge of the sales and advertising departments.

Goodrich Development Manager

Management of the Machine and Process Development Department of The B. F. Goodrich Co., Akron, Ohio, is now in the capable hands of Gilbert L. Mathias, one of Ohio's native sons who has had a considerable and varied experience in rubber mill engineering work in the Buckeye State.

Gilbert L. Mathias

Born in Galion, Ohio, October 15, 1886, and educated in the public schools there, his first business experience was with E. M. Freese & Co., in 1905. The following year he went as machinist's apprentice to the Morgan Engineering Co., Alliance, Ohio. From the machine shop he was promoted to the engineering department and detailed on blast furnace work. In 1908 he joined the staff of the National Tube Co., as a draftsman and assistant to the steam engineer.

It was in 1912 that he first became identified with the rubber industry, as a machine designer for The B. F. Goodrich Co., and thereafter his advancement in this specialized field was rapid. Following a year in the engineering department he was transferred to the experimental department, first as a draftsman and later as shop foreman. He was then promoted to assistant manager and finally to manager. The department was then in direct charge of Clive Eng, but is now under the plant manager and known as the Machine and Process Development Department.

Mr. Mathias is a Mason and a member of the Exchange Club in Akron.

The Rubber Trade in the Midwest

Midwestern Notes

William M. Gunlock, who recently resigned as vice-president of the Dryden Rubber Co., Chicago, Illinois, has been associated with that organization from July, 1921, to March, 1925. For over twenty-five years Mr. Gunlock has made a special study of the production of molded mechanical rubber goods, and was instrumental in organizing the sole and heel departments of the Dryden company and also the United States Rubber Co. His connection with the last mentioned organization extended from 1906 to 1921.

One of the branches formerly maintained by The Dayton Rubber Manufacturing Co., Dayton, Ohio, on 22nd street, Chicago, Illinois, has been removed to 3615 Iron street, Chicago, where better facilities for operation have been secured.

A factory addition which will increase the present floor space by one-third is being erected by the Elkhart Rubber Works, Elkhart, Indiana. More space and equipment have become necessary in order to take care of the demand for molded mechanical rubber goods, particularly pump valves and sheet packing. The company announces an advance of 5 per cent in its prices for the latter class of goods, particularly red sheet packing, and a 10 per cent increase on all lathe-cut gaskets, rings, and washers.

W. A. Simonson has been appointed general sales manager of the International Rubber Company of America, Anderson, Indiana. Mr. Simonson has had much experience in the automotive industry, his connections including associations with the Firestone organization, and later with the Goodyear company.

A very successful year of business was reported at the annual meeting of the stockholders of the Marathon Rubber Products Co., Inc., Wausau, Wisconsin, manufacturer of raincoats, rubberized fabrics, hospital sheeting, calendered rubber clothing, etc. For the ensuing year the following officers were elected: W. C. Landon, president; G. G. McIntosh, vice-president; and A. Burnett, secretary and treasurer.

The Federal Tire & Supply Co. has moved into a modern two-story building at the corner of Broadway and Biddle streets, Milwaukee, Wisconsin. The organization carries a very complete line of automotive supplies, and handles Federal and Goodyear tires.

Production at the plant of the Ajax Rubber Co., Inc., Racine Division, Racine, Wisconsin, averages from 3,500 to 4,000 casings daily, with a corresponding output of 8,000 tubes. L. T. Vance is vice-president.

The Murray Rubber Co., Trenton, New Jersey, has opened a direct factory branch at Kansas City, Missouri, with L. E. McCune in charge. Murray representatives will operate out of the Kansas City office instead of from the factory at Trenton, New Jersey. R. M. Stuart is general manager of the Murray organization, and is in charge of the mechanical goods division.

Buckley-Pannell-Setzer, Inc., 3569-71-73 Lindell Boulevard, St. Louis, Missouri, announces that the interest of T. C. Setzer has been purchased by H. G. Buckley and W. C. Pannell, and that the company's name will hereafter be the Buckley-Pannell Tire Co. The organization is the distributer in the St. Louis territory of Lee cord and balloon tires, and also Republic Stag solid tires and Overman cushion tires.

The Ajax Rubber Co., Inc., has since January 1, 1925, been operating at 2125 Pine street, St. Louis, Missouri, as a factory branch of the Ajax organization. The company's plant is at Trenton, New Jersey.

The General Tire Co. of St. Louis, 3504 Lindell boulevard, St. Louis, Missouri, was organized on February 14, 1925, for the purpose of distributing General tires and tubes in St. Louis and vicinity.

Salesmen sent out by the Lee Tire & Rubber Co., 33 West 60th street, New York, N. Y., are now covering the states of Nebraska, Iowa and South Dakota, while the Rudisell Rubber Co. is acting as warehouse for the Lee organization in the above territory.

The Rubber Trade on the Pacific Coast

Business thus far in 1925 among rubber manufacturers and dealers has been very good in the Pacific Coast territory, and a particularly cheerful mood is prevalent. The building trades are expanding operations after a period of comparative dullness, considerable activity in oil field operations is noted, a marked demand for hose, belting, and other mechanicals is coming from mining, railroad, agricultural, and big contracting concerns, and a great increase in the use and number of passenger and commercial automobiles is making tire manufacturers and distributers hustle to meet present and anticipate future demands.

While some makers of tire repair materials report business good, many find buyers purchasing cautiously, evidently fearing that the rivalry among tire makers for Coast trade will soon result in price cutting, with the resultant falling off in repair work.

Truck tire sales are steadily rising and prices are well maintained. Sales have been so well standardized by the united dealers' associations, especially in California, that not only are the dealers making fair profits but the activity of the gyp has been eliminated. There is no underselling, listed prices are adhered to, manufacturers find frank cooperation, and exchange of credit information has helped to stabilize business.

Rubber manufacturers on the Coast are taking kindly to the idea of overtime work, and many now operate on a 16-hour daily schedule. Several work on three 8-hour shifts, and results are satisfactory. Mill owners find they get a larger return on capital investment, save on factory extensions and additional equipment, can execute orders with less delay, and that employes are usually eager to increase their earnings, many of them being piece-workers.

Pacific Coast Notes

The Keaton Tire & Rubber Company of San Francisco, which formerly had tires made at the Keaton factory in Chicago, will now supply the Coast trade from its new factory at 17th and Kansas streets. The factory is a large brick structure with two stories and a mezzanine floor and is claimed to be one of the best-equipped of its size in the country. The plant has a capacity of 350 tires on an 8-hour schedule, but the factory is now operated day and night. The Keaton concern also supplies rims and wheels, and can now make changeovers readily for balloon tire and wheel equipment.

The Western Rubber Ace Co., of which E. J. Palmer is president, distributer of sponge rubber inner tubes, has moved its office and warehouse from 312 Clay street, San Francisco, to 39 Turk street.

Overtime is the rule in most of the departments at the big Pioneer Rubber Mills, Pittsburg, California. The concern is running strong on hose, belting, and general mechanicals. One order to be filled by June 1 is for 10,000 feet of 3½-inch heavy cotton jacketed fire hose for Los Angeles.

Howard F. Smith, assistant sales manager of the General Tire & Rubber Co., Akron, Ohio, has visited the northwest field and reports that here the company finds an outlet for a large part of its 5,500 daily production of tires, 60 per cent of which are balloon tires.

According to F. J. Cullen, plant manager, the Columbia Tire Corporation, Portland, Oregon, has decided to feature a new heavy duty cord tire with a very flat specially patterned tread, in addition to a full line of C-T-C tires.

Investigation by the Los Angeles police of a patent tire sales scheme conducted by the Nu-Air Rubber Company of America, revealed that some 1,500 persons had paid $30 each for the privilege of making or allowing others to make and sell tires. The operator of the scheme stated that no tires had been or were being made; that operations up-to-date were merely an "advertising campaign." He was warned to quit or face prosecution.

The Coraja Rubber Co., 4502 Melrose avenue, Los Angeles, California, of which Ralph I. Guy is president, is planning a factory for the manufacture of tire boots and other rubber automobile accessories. The company is distributer of the Coraja fabric patch which is made in Dallas, Texas, by the inventor, C. O. Duffy, with his brothers, R. A. and J. A. Duffy. The vice-president of the Los Angeles concern is L. B. Rice; secretary-treasurer, A. W. Hamm; and general manager, D. B. Guy.

The Bra-den Tire & Rubber Co., Norwalk, California, has closed its distributing station at 327 W. Pico street, Los Angeles, and will make deliveries from its factory. The concern makes a full line of high pressure tires of the Wayne-Way type using weftless fabric with separately-rubberized cords. C. H. Braden is president.

Herbert N. Wayne, of Santa Monica, California, who on June 4, 1923, won a decision in the United States Court of Appeals of the District of Columbia, Washington, for priority of invention for a method of making weftless cord tire fabrics, has made several improvements in the process and apparatus. Many of the Wayne machines are now in successful operation in tire factories on the Pacific Coast.

The V-T Rubber Co., 970 S. Alameda street, Los Angeles, established in January, 1924, and controlled by W. J. Voit, specializes on tire repair material, and especially on camelback tread stock, making three grades of the latter. Within a year sales are reported to have increased 400 per cent.

Wesley Smith, Los Angeles branch manager for the Keaton Tire & Rubber Co., recently addressed the shareholders at a meeting in San Francisco on sales and promotion, and also attended a conference of the branch managers of the Coast cities.

The Coast Tire & Rubber Co., Oakland, California, reports that under the new management sales have more than doubled. Production covers a full line of high pressure cord casings, and in a few months a line of balloon tires may be taken up.

Production of the Goodyear Tire & Rubber Co., Los Angeles, California, is 6,000 casings and 6,500 tubes daily, for distribution in eleven western and Pacific Coast states. Recent visitors at the plant have been Paul W. Litchfield, vice-president of the parent company, and C. W. Graham, merchandise distributing manager.

The Samson Tire & Rubber Co. has added three wings to its factory at Compton, California, and improved its mechanical equipment to take care of expanding business. A full line of high pressure cords, several sizes of balloon tires, and super-size 8 and 10-ply stage tires are being made. President Adolph Schleicher, who has been ill, is able to be about again.

George W. Daum, vice-president and general manager of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, and Harry S. Field, general sales manager of the Lee Rubber & Tire Co., New York, N. Y., were recent visitors to the Coast.

The Southwestern Rubber Co., manufacturer of tire repair materials, formerly at 340 West Pico street, Los Angeles, California, is now in its new quarters at 516 East Fourth street, Los Angeles.

J. B. Magee, branch manager of the United States Rubber Co., Los Angeles, California, has been in Arizona looking after company business. He now has thirty-five outside salesmen aiding him in the Southwest.

The Ajax Rubber Company of New York has leased a two-story brick building at 1935 Bay street, Los Angeles, California, as a warehouse, which provides 14,000 square feet for offices and storage facilities and also a spur of railroad track. A new merchandising policy is said to have doubled its tire sales in Southern California and made larger quarters necessary.

Work has been started on the new factory of the Dudley Tire Mold & Manufacturing Co. in the South Gate section of Los Angeles, California. The concern is said to have but one manufacturing competitor west of Kansas City. The officers are P. E. Keeler, president; A. V. Reed, vice-president; and T. P. Dudley, secretary-treasurer.

Landis D. McConnell, a department manager, and for fourteen years actively identified with the Spreckels "Savage" Tire Co., San Diego, California, has been appointed general manager to fill the vacancy caused by the death of E. F. Norton. The company produces nearly 3,000 casings daily in three grades and averages 7,000 tubes a day, distribution covering the territory between the Coast and the Rocky Mountains.

The Rubber Trade in Canada

Rubber footwear salesmen are now taking orders for spring goods and this year they have reduced prices in their favor, despite the advance in crude rubber. It is notable that Canadian manufacturers have been able to maintain prices and still carry on without impairment in quality. Canada of course should be in the forefront as a producer of winter footwear, in fact she is in the lead as far as winter sports are concerned. At present, business is running along very nicely and the manufacturers are urging retailers to order a reasonable proportion of their requirements for next season. The point is, there are twelve months of manufacture against only four months of shipping and to carry on efficiently it is essential to have a substantial volume of orders in advance of the season so that the load may be distributed to the best advantage.

Local dealer trade is being urged to book certain lines of rubber goods such as fruit jar rings, and prices are reported as steady. The feeling seems to be that there will be no declines, and there is no hesitation about placing orders for normal requirements. Car owners are getting their cars ready, and tire sales are good. With good weather conditions during the next few weeks, there should be a brisk trade in tires and accessories.

New Heel and Tire Price Lists

From London, Ontario, comes the report of a reduction in certain makes of rubber heels, as follows:

SCOOP RUBBER HEELS—	
Men's black or tan, dozen pairs	$1.65
Women's black or tan, dozen pairs	1.25
PANCARD RUBBER HEELS—	
Men's black or tan, dozen pairs	1.65
Women's black or tan, dozen pairs	1.25

A new price list dated March 17, issued by the Dominion Rubber System, Montreal, announces reductions in 30 by 3½ Royal cord tires by about 15 per cent. No changes have been made in other sizes, and the reduction is based on lower production costs through increased demand. Present prices on Dominion clincher casings are:

Nobby fabric, 30x3½	$8.00
Nobby cord, 30x3½	8.00
Royal cord (regular) 30x3½	9.45
Royal cord, 30x3½	10.65
Nobby fabric, 30x3	7.85

Above prices include sales tax.

The Goodyear Tire & Rubber Co., of Canada, Ltd., New Toronto, Ontario, Canada, announces lower tire prices as follows:

30 x 3½ Standard all-weather tread cord casings	$9.45
30 x 3½ Heavy tourist all-weather tread cord casings	10.65

Canadian Notes

The Canadian Goodrich Co., Ltd., is now installing at Kitchener, Ontario, machinery and equipment for the manufacture of Hi-Press rubber footwear and zipper boots. Goodrich now brings to Canada the exclusive processes and methods to make here the same products that have won favor elsewhere.

The Rubber Products Company of Canada, Montreal, has been organized to provide rubber covered rolls, required by the manufacturers of newsprint. It is said that the American Wringer Co. will be associated with the new enterprise.

Business has been unusually good with the Kaufman Rubber Co., Ltd., Kitchener, Ontario, during 1924 and the early months of 1925. Arrangements have been made by this firm for an extensive advertising campaign for 1925, covering the entire Dominion. Work will commence shortly on a large addition to the factory plant. An "L," 80 by 120 feet, five stories and basement will be erected adjoining the present factory. It will be of brick and concrete construction and modern in every respect.

F. H. McFadden, factory manager for the F. E. Partridge Rubber Co., Ltd., Guelph, Ontario, recently summed up the business situation as follows: "Our plant is busy; we work night and day, and hope to turn out more goods than ever this year."

The plant of the Northern Rubber Co., Limited, Guelph, Ontario, is still working day and night, and spring orders are equal to those of last year.

T. Y. O'Neill has been appointed general sales manager of the Miner Rubber Co., Ltd., Montreal, following the vacancy caused by the resignation of F. N. Meinzer. The company will move its executive offices from Montreal to Granby early in May.

F. N. Meinzer, formerly sales manager of the Miner Rubber Co., Ltd., Montreal, has joined the sales staff of the Kaufman Rubber Co., Ltd., and is now Montreal representative for the Province of Quebec.

W. H. Alderson has been made chairman of building construction in connection with the Canadian National Exhibition, Toronto. Mr. Alderson is associated with Gutta Percha & Rubber, Ltd., Toronto.

W. Herbert Galt, salesmanager of Gutta Percha & Rubber, Ltd., Toronto, was a recent trade visitor to Montreal.

The Rubber Trade in Europe

Great Britain

THOSE who are studying the prospects for various British industries note the improving conditions and state that the outlook for trade has never been so bright since the post-war slump as at the present day. Prominent politicians and leading industrialists of all political creeds are showing a disposition to unite in an effort to introduce a greater spirit of cooperation between employers and employes, while the whole question of unemployment is also being carefully considered.

In line with the developing of British industries, the subject of the promotion of world trade is receiving attention. At the recent annual meeting of the Federation of British Industries, Sir Eric Geddes, president of the Dunlop Rubber Co. and until lately president also of the Federation, stated that British manufacturers should endeavor to get into closer touch with fellow manufacturers in other principal industrial countries of the world in order to still further promote world trade. Although realizing that his suggestion represented to the British manufacturer an experiment full of possibilities both of good and evil, Sir Eric apparently firmly believed that it was essential to widen many of the markets, and that in regard to several important questions the larger manufacturers of many nations could successfully cooperate without friction and with real benefit to both sides.

A good promise for the trade was stressed by D. F. L. Zorn in the course of his remarks as chairman at the annual general meeting on March 12 of the Rubber Shareholders' Association. Mr. Zorn said in part:

> London stocks of rubber, which at the beginning of 1923 exceeded 79,000 tons, are today under 22,000 tons. This represents little more than a fortnight's world consumption at the current rate. There is every indication that the 10 per cent quarterly releases, which may be expected as the year goes on, will be promptly consumed by manufacturing demand. Advices which reach us from the United States are distinctly encouraging, and show that there is brisk activity in the automobile and tire industries.
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> All eyes are fixed on the United States, and naturally so, considering the enormous proportion of the world's rubber consumed over there. But we must not forget that countries outside America last year absorbed more than 130,000 tons. More rubber may be taken this year by non-American consumers, and this may have an important bearing on the situation. It is quite possible that we may not have to wait for such a very remote future to see the world consuming all the rubber it can produce.

Institution of the Rubber Industry

The third annual dinner of the Institution of the Rubber Industry was held at the Hotel Victoria, London, W. C., on the evening of March 16. Some of those present who are prominent in the industry included Sir Stanley Bois, president of the Institution; D. F. L. Zorn, chairman of the council of the Institution; W. J. U. Woolcock, president of the Society of Chemical Industry; Alexander Johnston, chairman of the India Rubber Manufacturers' Association; W. D. Campbell, vice-chairman of the Rubber Growers' Association; Sir Edward Penton; Fordyce Jones; and Oswald Latham, chairman of the London and District Section of the Institution. About 140 members and guests were present, the latter including a number of ladies.

On March 18 at a meeting of the Birmingham Section, Dr. C. S. Myers, director of the National Institute of Industrial Psychology, gave an interesting address, taking as his subject "Industrial Psychology as Applied to the Rubber Industry." A joint meeting of the Institution of the Rubber Industry and the Society of Chemical Industry was held March 19 in Manchester, when a paper on "The Joule Effect" was read by R. W. Lunn. On April 2 the Institution held a meeting at the Caledonian Station Hotel, Edinburgh, when James Kirkwood, of the Ioco Rubber & Waterproofing Co., Limited (Glasgow), read a paper entitled "Some Difficulties of Mechanical Rubber Manufacture." At the London meeting on April 6 Fordyce Jones read a paper which had been scheduled for an earlier meeting, the contribution being on "Standardized Rubberware."

Rubber Goods at Engineering Exhibition

Plans for securing space at the Shipping, Engineering and Machinery Exhibition to be held at Olympia during November, 1925, are being considered by the Propaganda Department of the Rubber Growers' Association. Rubber plays an important part in various classes of goods for ships and general engineering uses, and it is thought that the exhibition should be of great value in bringing the rubber manufacturers into touch with shipping and engineering interests. The propaganda department is accordingly desirous of forming a comprehensive display, and is therefore inviting manufacturers to participate, either in making suggestions or forwarding goods. The whole expense will be borne by the Rubber Growers' Association, and manufacturers loaning exhibits are not required to pay for space.

British Notes

The directors of the Dunlop Rubber Co., Limited, report that the profits from all sources for the twelve months ended December 31, 1924, total, after providing for depreciation, £1,763,973. After necessary deductions there remains a net profit of £1,500,151, this figure representing an increase of approximately 50 per cent when compared with the net profit for the preceding eighteen months, of £1,451,792. The year's profit does not take into account the deficit of the American company for the year 1924, a deficit that is incidental to the organizing of a business of such magnitude. The American division is said to be making very satisfactory progress, with output and sales at the present time far larger than anticipated.

Sir George Beharrel, managing director of the company, has been quoted as declaring that it is not fully appreciated to what extent the decrease in rubber stocks hampers manufacturers in developing plans. He believes that the Stevenson policy of restriction with the object of advancing prices will in the long run prove very injurious to rubber producer and manufacturer alike.

Sir Frank Swettenham, always associated with the first experiments in planting *Hevea brasiliensis* with a view to commercial exploitation, and later connected with one of the leading rubber companies, has been rewarded for his public services by being appointed King of Arms of the Order of St. Michael and St. George. He has always been interested in rubber plantation welfare and in 1922 was elected chairman of the Rubber Growers' Association.

The International Lawn Tennis Federation has decided to make regulations governing tennis ball deformation limits. Accordingly it is provided in the Rules of Lawn Tennis, No. 3: "The ball shall be not less than 2½ inches, nor more than 2⅝ inches in diameter, and not less than 2 ounces nor more than 2 1/16 ounces in weight." As regards tests to be undertaken in Great Britain during the current year, the limits of deformation are to be not less than .295 inches and not more than .320 inches when subjected to a pressure of 18 pounds applied to each end of any diameter at a temperature approximating 68 degrees F.

The Dunlop Rubber Co., Limited, of Fort Dunlop, Birmingham, England, has purchased from De Mattia Brothers, Inc., Garfield, New Jersey, the exclusive rights in France and England to De Mattia patents covering automobile tire cores and chucks. The English rights do not include Canada or Australia, the rights in the latter country having been purchased in 1923 by the Dunlop

Rubber Company of Australasia, Limited. De Mattia Brothers will still continue to serve the foreign trade by exporting tire molds and necessary equipment for the manufacture of pneumatic, cushion and solid tires.

Germany

The Leipzig Fair

The Leipzig Spring Fair this year was rather quiet in more respects than one. There was less noisy advertising and fewer visitors. But of those that did come there seemed to be a larger percentage of people who really came for business, while there were fewer who attended for sightseeing purposes only.

Business on the whole was satisfactory although it developed slowly. Owing to a new period of money tightness, orders for local consumption were not as considerable as was hoped, and were as a rule for small amounts only. However, taking into consideration the political and economic condition prevailing at present, the home demand could not be called unsatisfactory.

Fortunately export business was livelier and in spite of keen foreign competition some good orders at reasonable prices were placed for various countries, as Austria, Czechoslovakia, Holland, Scandinavia, England and Turkey, particularly for surgical goods. Trade in technical goods was quiet and certain lines, especially belting and hose, suffered much from underbidding. Packing of all kinds went better.

Foreign competition was very severe in certain branches, for example, bathing caps and bathing slippers. The former were offered by foreign firms at M. 0.35 to M. 0.45 in styles which the German concerns could not sell for less than M. 1 to M. 1.20. Although business in rubber toys and balloons was good, nevertheless the effects of foreign—in this case American—competition were felt too. The German representative of the Miller Rubber Co., Akron, Ohio, offered balloons at 11 marks per gross against the German price of 18 marks per gross.

Underselling in toy balls was rife, particularly on the part of Sweden, which unaccountably enough was able to undersell Germany at the Leipzig Fair, whereas it usually imports balls from this country and the prices in Sweden are generally high.

Hamburg Rubber Market

From the annual report of the crude rubber market in 1924 by Gustav F. Hübener, Hamburg, the following is culled:

During the first eight months of 1924, the Hamburg market reflected the general depression prevailing in the country. In September a change for the better took place and the last quarter of 1924 brought a lively business at higher prices. The previous extraordinarily low prices for plantation had caused a cessation in the increasing arrivals of wild grades. However, the rising prices renewed interest in these rubbers, and districts that had stopped producing started activities again. Shipments of maniçoba, mangabeira besides small parcels of the popular Mollendo rubber, Peruvian and Putumayo block from America, West African, Cameroon and Congo qualities, as well as East Africans, manihot, Madagascar and wild Ficus, arrived at Hamburg and found a ready sale.

Wild rubbers are well liked in Germany despite the greater costs of preparation as compared with plantation grades, and larger shipments, it seems, would be welcome. Guayule, which is interesting the American industry again, is too expensive for German consumers. Shipments of balata were irregular and on the whole not very important.

New Rubber Goods

The Maschinenfabrik Konrad Edel, Zickstrasse 4, Nürnberg, has recently put on the market a machine that will cut, scallop, flute or perforate all kinds of material, the finest silks as well as linen, leather, felt, rubber, paper, oilcloth, etc.

The Firma Flügel & Polter, Leipzig-Plagwitz, has patented a bathing cap that is made by the dipping process. The cap is of course seamless and of lighter weight than similar caps made by other processes.

An enterprising firm manufacturing solid tires has hit upon the idea of sending to its customers souvenir paper weights made of sections of solid tire set in a nickel rim.

Interest in the possibilities of raw crêpe rubber is growing here too. One firm has sent out colored prospectuses showing bath mats in a variety of colors, combinations of colors and designs. Another firm is using it in various colors for bathing shoes.

France

Rubber Imports and Exports

The total quantity of rubber consumed by the French industry during 1924 came to 411,636 quintals (220 pounds), value 366,236,000 francs, against 370,300 quintals, value 329,395,000 francs in 1923. The chief sources of supply were England and her colonies, which shipped more than half of the total; Indo-China, with 50,010 quintals and Brazil with 26,262 quintals came next.

Of manufactures imported, France retained 13,859 quintals of tires and tubes instead of 11,682 quintals in 1923. Imports of footwear dropped from 1,844 quintals in 1923 to 843 quintals in 1924; belting, hose and packing also decreased from 10,292 quintals to 8,885 quintals. Unvulcanized rubber sheets, however, showed an increase from 998 quintals to 1,409 quintals; unvulcanized rubber sheets also rose slightly from 4,326 to 4,406 quintals.

The most important item of French rubber exports is tires and tubes, shipments of which continue to increase. Thus in 1922 the total of these articles was 144,782 quintals; in 1923, 181,683 quintals; and in 1924, 217,999 quintals. England as usual took the largest quantity, 46,471 quintals in 1924, followed by Belgium (25,076 quintals), Switzerland (18,506 quintals) and Spain (17,696) quintals. Footwear exports showed an increase from 15,195 quintals in 1923 to 25,853 quintals in 1924, as did belting, hose and packing from 15,514 quintals to 21,826 quintals.

Belgium

Trade in Rubber Goods

Belting is not an important item of import in Belgium, only 10 per cent of the total consumption being of foreign origin. Most of the belting used here is made of materials other than rubber or balata. Six firms in Belgium produce balata belting while there are only one or two smaller firms, besides the Englebert concern at Liege, which make rubber belting. Balata belting of foreign origin comes from Scotland, and the high grade rubber belting used here is supplied by an American firm.

Belgian imports of rubber belting from America came to 50,699 pounds, value $26,130 in 1922; 50,900 pounds, value $27,207 in 1923; and 31,633 pounds, value $18,663 in 1924. Balata and rubber belting imports from the United Kingdom during 1922 were 83,216 pounds, value £14,209 and in 1923, 99,568, a decided improvement as compared with 5,625 tons, value 56,245,887 lire in 1923.

With Italy, too, tires are the most important item of manufactured goods both as regards imports and exports. In the first nine months of 1924 shipments of tires and tubes into Italy totaled 1,109 tons, value 26,531,723 lire, against 1,056 tons, value 28,103,137 lire in 1923.

Exports of pneumatic and solid tires were 6,301.8 metric tons, of which pneumatics accounted for 5,041.3 tons, and solid tires 1,260.5 tons. The chief consumers of Italian tires are Great Britain (1,138.4 tons), Belgium (599.9 tons), Denmark (328.5 tons), Argentine (312.7 tons), British India (274.4 tons), Spain (248.5 tons), Austria (234.2 tons).

Imports of other rubber goods include rubber thread, value £16,762.

The Rubber Trade in the Far East

Malaya

SINCE the Chinese Chambers of Commerce decided to ask for the repeal of restriction, responsible Chinese in favor of the measure have been at great pains to prove that the Asiatics as a whole do not concur with the Chambers of Commerce, which represent only the trading element and not, to any great extent, the producers.

Recently in the Federal Council, the Hon. Choo Kia Peng presented the views of the Chinese planting community as gathered by him. According to official figures the acreage under rubber in the Federated Malay States is as follows:

	Acres
Large Asiatic holdings over 100 acres	105,540
Large European holdings over 100 acres	622,528
Medium holdings, 25-100 acres	97,000
Small holdings not over 25 acres	297,000

Of Asiatic holdings over 25 acres, 120,361 acres were in favor of restriction and 1,367 acres against restriction.

Inquiries outside the Federation also showed a large majority in favor of restriction. In the state of Johore, the Japanese representing an acreage of over 55,000 are also in favor of the continuation of restriction.

Much was made of the hardships of the small holders, but it seems that most of the dissatisfaction is due to the fact that they do not quite understand the measure. They also consider themselves much inconvenienced by the coupon system.

A real grievance of certain dealers is that they have altogether between 6,000 to 7,000 tons of uncouponed stocks in hand, representing a capital of 2 to 3,000,000 dollars. These stocks are claimed to have been purchased before May, 1923, when transactions in coupons were allowed, but after that date they became illegal and holders of the above stocks are unable to get rid of them under the present system.

Referring to this question of uncouponed stocks the Chief Secretary said that licensed dealers who had such stocks declared on May 1, 1923, would be granted coupons for the declared amounts and thus be able to export this rubber.

New Rubber Plantings

Now that the demand for rubber has improved and there is talk on various sides of an actual shortage of rubber, interest in new plantings has been revived. For some time past the opinion had been voiced that more attention should be devoted to the extension of planting, as the increasing exports from Dutch sources gave reason for uneasiness not only as regards the immediate effect upon efforts to keep up prices but also in connection with the future status of the Dutch colonies and Malaya as producers of rubber.

Now the *Federated Malay States Gazette* of February 20 publishes a report on the new plantings here since 1918. The effect of the slump is only too evident and the sharp decline in expansion from 1921 on would seem to offer some justification for the anxiety regarding a shortage expressed in some quarters. The figures for areas brought under rubber cultivation during 1918-1924 in respect of estates of over 100 acres follow:

FEDERATED MALAY STATES

	1918 acres	1919 acres	1920 acres	1921 acres	1922 acres	1923 or later acres
European owned estates	40,608	24,065	29,253	8,435	1,744	6,621
Asiatic owned estates	7,955	4,592	2,642	1,272	430	1,316
Totals	48,563	28,657	31,895	9,707	2,174	7,937

STRAITS SETTLEMENTS

European owned estates	2,843	1,282	2,506	830	169	747
Asiatic owned estates	982	473	136	119	8	685
Totals	3,825	1,755	2,642	949	177	1,432

UNFEDERATED MALAY STATES

	1918 acres	1919 acres	1920 acres	1921 acres	1922 acres	1923 or later acres
Johore	29,049	16,541	15,625	6,161	3,917	2,820
Kedah			not ascertained			
Kelantin	.....	.....	891	766	464	343
Trengganu	nil	nil	nil	nil	nil	nil
Totals	29,049	16,541	16,516	6,927	4,381	3,163
Grand Totals	81,437	46,953	51,053	17,583	6,732	12,532

It will be noted that whereas the area of new plantings for the first three of the six years under consideration totaled 179,443 acres, the total for the last three years was only 36,847 acres, a decrease of 142,596 acres.

Rubber Smuggling

Local papers regularly publish reports of seizures of smugglers by the preventive fleet. Apparently good work is being done; nevertheless it gives food for thought that captures are as frequent as ever and one is tempted to speculate as to how many boats escape for each one captured. While in some quarters there is a tendency to consider smuggling of minor importance, in others it is causing a certain amount of anxiety, which is naturally stimulated by the reports from private persons, eye-witnesses, as to what would appear to be rather a serious state of affairs. One European claims to have seen no fewer than twenty boats setting out on one occasion. A vessel of the preventive fleet seized one, but the others escaped. It has been suggested that wealthy Chinese are at the back of what amounts to a system of organized smuggling. These Chinese, of course, keep in the background and hire men to do the dirty work for them. Families of men seized are adequately supported and on their release the men receive a certain compensation.

Thorough investigation of these reports is urged and the need for demanding certificates of origin is insisted upon.

Rubber Propaganda

Although the committee appointed in connection with the competition instituted by the Rubber Propaganda Committee for a type of footwear suitable for the laboring classes in the East has been considering the samples sent in, no decision has as yet been arrived at. It seems that results have been disappointing and that none of the 45 samples submitted is likely to receive the award. Both sandals and shoes were sent in, but what is wanted is a suitable sandal.

Some dissatisfaction has been felt owing to the delay in reaching a final decision, and as usual criticism of the work of the Propaganda Committee has cropped up. Now some persons suddenly discover that not much is to be hoped for from propaganda for rubber footwear. Most laborers, it is claimed, dispense with footwear for everyday purposes and for dress occasions are content to wear wooden clogs that may be purchased for a few cents. It is urged that more attention should be given to experiments with rubber paving and fault is found with the committee in question for having practically shelved this problem.

While on the subject of rubber roadways, it should be mentioned that experiments in America as published by THE INDIA RUBBER WORLD, and in England, are followed with the greatest interest throughout the rubber producing centers of the East.

Malayan Notes

Exports of rubber from Malaya during February were 21,622 tons of rubber as compared with 19,395 tons in February, 1924. Total imports of foreign rubber during February, 1925, were 10,070 tons, which is about the same as in January. It is noted that shipments to the continent of Europe increased substantially during the first two months of this year as compared with last year.

Balloon tires are being taken up in Malaya and appear to give satisfaction. A writer to the *Malayan Tin & Rubber Journal* was frankly enthusiastic about them. He had a set of Michelin balloon tires which he had used over 8,000 miles of not very good road, and the design was only just beginning to wear off. He had had only two punctures and these were caused by nails. Balloon tires made riding on second rate roads so much more comfortable and gave such a sense of security that he felt sure that once anybody tried them, the old type of high-pressure tire would never be used again.

Netherlands East Indies

Preserving Fruit with Latex

P. J. S. Cramer finds that the reports concerning his method of preserving fruit by dipping in rubber latex are not quite accurate and proceeds to tell the true story.

A few years ago he was busy at his home with tests to coagulate latex by allowing it to dry in thin layers. His wife, who saw him do this, took some mangos and dipped them in the latex and then put them back into a bowl. The results of this and similar tests by Mrs. Cramer were such as to interest Dr. Cramer too, and the matter was proceeded with in a more scientific manner. When a friend went to Europe on leave, a few boxes of mangosteens thus treated were sent with him and after a voyage of some six weeks he arrived in Paris and found 60 per cent of the fruit was in good condition. The *Revue de botanique appliquée* gave publicity to this experiment at the time, and also THE INDIA RUBBER WORLD, September 1, 1924, 827.

Subsequent experimenting showed that the matter was not as simple as it at first appeared to be. The fruit had to be very carefully selected and the preservative effect was not the same for all kinds. The process, Dr. Cramer thinks, is of particular interest to those countries where an intensive, careful system of fruit growing exists combined with a well-organized sales system, rapid transportation and ready consumption. At present he is in touch with investigators in Holland, France and America and further experimenting is being continued. Meanwhile a patent for the process has been obtained by Mrs. Cramer-van Deventer, who first got the idea of dipping fruit in latex.

To show how facts have been distorted by the press, Dr. Cramer says that while in Honolulu he explained his process to some American colleagues, adding that Hevea latex was so harmless that even a delicate fruit like the strawberry was not adversely affected by it. When the story appeared in the papers it said that strawberries coated with latex remained in good condition for a few weeks.

The Hidden Aim of Restriction

As a rule, the Dutch papers do not say much about restriction. Having decided against it, many Dutch apparently think that that ends the matter as far as they are concerned. Occasionally a writer will suggest that in all fairness the Dutch should join the English, and a member of the opposition may reply that there is no question of fairness as the English were plainly told that the Dutch did not want restriction.

A writer in the *Indische Culturen* (*Teysmannia*), after giving the usual reasons for the undesirability of restriction takes up a new tack.

The aim of restriction is ostensibly to help the rubber industry to get a paying price for its product. This may be one object, but the real, hidden aim of restriction seems to be a quite different, very much more far-reaching and comprehensive one. This is suggested by the fact that the minimum price has been put at 1*s.* 3*d*. Any normal, properly organized estate in full production can produce at a cost of around 7*d*. per pound, which leaves a profit of 40 to 53 per cent at the price of 1*s.* 3*d*. This being the case, the minimum price has been placed far too high if the sole object of the restriction scheme is to support the industry, and it is this high price that will eventually cause the collapse of the scheme. For naturally a gain of over 40 per cent is a strong incentive to people to extend their plantings.

As a result the influence of the scheme diminishes while the burdens, at times when prices fall below the minimum, press with increasing heaviness on the adherents. The logical result of this is that in the end restriction will have to be given up.

The real object of restriction, however, was not primarily to assist producers but English rubber manufacturers. It is well known that the latter have invested heavily in rubber plantations whereas the American rubber manufacturers possess very few estates as compared with their consumption and are thus forced to buy the greater part of their requirements in the open market.

The higher the prices on the open market, the greater the advantage to the English manufacturer, who gets his rubber at cost price. Consequently the English rubber industry is enabled to produce more cheaply and to compete with the Americans.

All this explains the unusual interest the English display in native rubber. Practically all of this rubber goes to America at prices below those obtained for estate rubber and frequently below the cost price of some estates.

If the only aim of restriction had been to assist rubber producers, the minimum price should have been so fixed that the margin of profit left would have been sufficient to keep estates going though not so high as to stimulate new plantings, as is at present the case.

If, concludes the writer, his surmise is correct and the Stevenson scheme was enforced to assure the English manufacturers the monopoly of the rubber industry, Dutch planters cannot but congratulate themselves that they refused to cooperate.

Native Investigation Committee

This committee, with English cooperation, has just been formed to investigate the influence of native rubber in the Netherlands East Indies. This is a most important matter both from an economic and from a fiscal point of view, and Mr. Rutgers, head of the Department of Agriculture, has become president of the committee.

Two persons, if possible an official of the Agricultural Department and a planter, will be selected to visit the different centers of native rubber and to gain information on the following points: (1) The influence of price on the exports of native rubber; (2) export figures from the various ports; (3) the trustworthiness of such figures; (4) market prices for native rubber in comparison with prices of standard estate rubber; (5) quality of the product exported; (6) the present extent of the tappable and nearly tappable rubber plantings of the natives; (7) the extent of the young areas; (8) the expectations from the remaining area; (9) the labor supply for new plantings and tapping; (10) the place that rubber cultivation takes in the economic life of the district studied.

Mr. Rutgers has requested that the respective authorities extend all possible help to this committee when it arrives.

Forward Contracts

The Rubber Cultuur Maatschappij Amsterdam reports the forward sale to an American concern of 1,200,000 pounds out of the 1925 crop, delivery October 1 to December 31, 1925, and out of 1926, 1928, 1929 crops, average per annum about 5,500,000 pounds, altogether about 23,200,000 pounds, in the form of latex, at the average monthly London price for standard sheet, but with a minimum of 1*s.* 2*d*. per pound.

Amsterdam Tapanoeli Rubber Cultuur Maatschappij has sold forward 60,000 half kilos (80 per cent standard sheet), delivery January-December, 1926, at 93 cents (Dutch currency) per half kilo, c.i.f. New York. Out of crop 1925 it has sold 60,000 half kilos (85 per cent standard crêpe), delivery July-December, 1925, at 1.02 guilders per half kilo, f.o.b. Sibolga.

Cultuur Maatschappij Waringin sold out of 1926 crop 120 tons standard crêpe, delivery 10 tons per month at 0.90 guilders per half kilo, f.o.b. Java.

Recent Patents Relating to Rubber

The United States

Issued* March 17, 1925

No. 1,529,654 Tire core. V. H. Hurt, Fort Madison, Iowa.
1,529,737 Inflatable life-saving and swimming device. M. Elfenson, Toronto, Ontario, Canada.
1,529,981 Lineman's sheet rubber protective garment. W. K. Biton, Toronto, Ontario, Canada.
1,530,093 Pressure gage. A. L. Ryan, Pittsburgh, Pennsylvania.
1,530,094 Automatic tire valve. A. L. Ryan, Pittsburgh, Pennsylvania.
1,530,301 Rubber covered wooden heel. J. E. M. Cooke, assignor to Westbrook Cooke, Ltd., both of Stafford, England.
1,530,369 Wheel with inner and outer pneumatic tire. E. Jackson, Indianapolis, Indiana.

Issued* March 24, 1925

1,530,574 Pneumatic tire. W. H. Paull, Birmingham, England, assignor to Dunlop Tire & Rubber Co. of America, Buffalo, New York.
1,530,603 Inflatable air cushion arch support for shoes. A. Klotz, Munich, Germany.
1,530,774 Transmission belt. I. R. Kepler, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.
1,530,794 Tire cutting tool. F. G. Swan, Eureka, California.
1,530,800 Flexible coupling. G. F. Wilson, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.
1,530,837 Tire coupling. L. Lisson, assignor of two-thirds to I. J. Berman and M. Lisson, all of Syracuse, New York.
1,530,902 Wheel rim and tire. J. S. Matthew, Sutton Coldfield, assignor to The Dunlop Rubber Co., Ltd., a corporation of Great Britain.
1,530,923 Toy balloon. H. F. Anns, London, England.
1,530,997 Rubber signboard with detachable rubber letters and figures.
1,531,056 Elastic tire with gable-like section. F. A. Wilson, London, England.

Issued* March 31, 1925

1,531,306 Rubber heel. J. J. Percivall, East Orange, New Jersey.
1,531,493 Hard rubber heel protector. Margery Maxon, assignor of one-half to L. J. Lieberman, both of Chicago, Illinois.
1,531,506 Golf tee. D. Robinson, Atlantic City, New Jersey.
1,531,672 Elastic attachment for saddle girths, stirrup leathers, etc. W. H. McLean, Malvern, Victoria, Australia.
1,531,999 Rubber and cord disk for flexible couplings. R. J. Stokes, Trenton, assignor to Thermoid Rubber Co., Hamilton Township, both in New Jersey.
1,532,037 Inflatable life buoy or swimming device. R. E. Cahill, Youngstown, Ohio.

Issued* April 7, 1925

1,532,143 Inflatable life-preserver suit. A. Kurtis, Brooklyn, New York.
1,532,196 Cushion wheel. R. R. Mundell, Chicago, Illinois.
1,532,209 Rubber heel. J. G. Tufford, Elyria, Ohio.
1,532,304 Elastic body brace. D. V. Cunning, Youngstown, Ohio.
1,532,396 Valve mechanism. J. R. Gammeter and W. D. Kmentt, both of Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y.
1,532,425 Tire and combination tire protector and non-skid device. F. Markwick, Detroit, Michigan.
1,532,444 Bust conforming brassiere with elastic section. O. S. Cass, assignor of one-fourth to W. Sandbank, both of New York Mills, Minnesota.
1,532,658 Valve stem for pneumatic tires and wheel rim therefor. J. E. Hale, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.
1,532,725 Laminated landing wheel, or the like. H. N. Atwood and G. B. Bains, 3d, Reading, Pennsylvania, assignors by mesne assignments to Rubwood, Inc., Lawrence, Massachusetts.
1,532,823 Elastic corset with catamenial bandage support. K. B. Kirby, Somerville, New Jersey.
1,532,977 Rubber plywood wheel. H. N. Atwood, Monson, assignor to Rubwood, Inc., Lawrence, both in Massachusetts.
1,533,008 Rubber half sole. C. R. Keiser, Auburn, Indiana, assignor to The Regal Rubber Co., Dayton, Ohio.

Issued* April 14, 1925

1,533,160 Heel with rubber section. L. Buckner, New York, N. Y.
1,533,301 Inner blow-out boot for pneumatic tires. L. G. Beloud, San Francisco, California.
1,533,339 Cushion tire. A. A. Robb, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.
1,533,347 Soft vulcanized rubber sheet for felt shrinking. W. A. Lorenz, Hartford, Connecticut, assignor to United States Hat Machinery Corp., Richmond, Virginia.
1,533,406 Rack equipped with individual backing of rubber for insuring uniform pressure upon explosive charges. B. Grotta, Tamaqua, Pennsylvania, assignor to Atlas Powder Co., Wilmington, Delaware.
1,533,535 Flower and fruit gathering pinching scissors employing rubber block. M. Audibert, Salon, France.
1,533,618 Instrument for nasal treatment. J. Taylor, Jr., Wooster, Massachusetts.
1,533,732 Spray and wash rubber glove. R. L. Frost, Cincinnati, Ohio, assignor of one half to Enoch P. Pinkston, Norwood, Ohio.
1,533,970 Covering for tires. M. D. Campbell and H. C. Heisey, assignors to The Perkins-Campbell Co., all of Cincinnati, Ohio.
1,533,973 Quilted waterproof pad. S. Cohen and S. Kilberg, both of Brooklyn, New York.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

Granted March 24, 1925

247,879 Hose supporter. P. Cohen, Buffalo, New York, U. S. A.
248,094 Conveyor belt. The Dunlop Tire & Rubber Goods Co., Ltd., assignee of L. E. Levey, both of Toronto, Ontario.
248,037 Rubber cushion connection for vehicles. The Rubber Shock Insulator Co., Inc., assignee of F. L. Lipcot, both of New York, N. Y.
248,087 Rubber footwear. W. B. Wiegand, Kitchener, Ontario.

Granted March 31, 1925

248,191 Sportsman's wading stocking. C. F. Arnold, San Francisco, California, U. S. A.
248,368 Tire bead. The National Standard Co., Niles, Michigan, assignee of A. J. Pennington, East Cleveland, Ohio, both in U. S. A.

Granted April 7, 1925

248,467 Emergency tire. C. H. Vogel and A. R. Shantz, both of Carstairs, Alberta, Canada.

The United Kingdom

Published March 4, 1925

227,180 Golf bag with rubber pocket for balls. P. C. Cannon, Fairlegh, Bellevue, Shrewsbury.
227,225 Colored rubber buffer for umbrella ribs. D. R. Jackson, 6 Water street, Birkenhead.
227,272 Laceless footballs. H. Thorp, 6 Hawthorne street. A. B. Proctor, 78 Granville street, and H. Collinson, 48 Clarendon street, all in Barnsley.
227,290 Artificial foot with rubber cushioning. W. H. Tresidder, 12 Burleigh street, Strand, London.
227,297 Rubber covered metal ball with rubber plug for valve float. J. W. Thompson and G. P. Cooper, 63 Chancery Lane, London.
227,308 Rubber impregnated and/or coated driving belt. Dunlop Rubber Co., Ltd., 1 Albany street, Regent's Park, London. C. A. Moody and R. Truesdale, of Dunlop Rubber Co., Fort Dunlop, Erdington, Birmingham.
227,345 Rubber hot water bottle having the stopper sunk in a recess. S. Lambert, Hillsborough, St. Luke's Park, Torquay, Devon.
227,373 Laminated elastic hose pipe. K. Kort, 33 Gretschenstrasse, Hanover, Germany.
227,387 Rubber tip cup for umbrellas. G. Schlemmer, 304 East 86th street, New York, N. Y.

Published March 11, 1925

227,485 Rubber mats for automobiles. A. G. Barrett and H. H. Burton, Evington Valley Mills, Leicester.
227,525 Table game employing rubber cushions and rubber rings. G. G. Thomas, 1 Tanfield Court, Temple, London, and H. Brooker, Brooklands, Station Road, Laindon, Essex.
227,532 Rubber springs. Spencer, Moulton & Co., Ltd., and R. T. Glascodine, 2 Central Bldgs., Westminster.
227,569 Thermometer with detachable rubber teat for taking the temperature of infants. G. F. Randall, 141 Derby street, Bolton.
227,590 Thermionic valve holder employing sponge rubber and ebonite disks. Sterling Telephone & Electric Co., Ltd., T. D. Ward-Miller, and W. M. Holbeach, 210 Tottenham Court Road, London.
227,669 Rubber and fiber stiffener for the peak of a cap. J. F. Key, 27 Balcarry Road, Mosspark, Glasgow.
227,729 Rubber and canvas piston packing. T. McHugh, 32 Walshaw street, Oldham. (F. Wight, 1425 East Harrison street, Springfield, Ohio, U. S. A.)
227,731 Bottle-washing machine employing rubber. J. Brusson, 15 Rue Valdor, Liege, Belgium.

Chemical patents will be found on pages 473-474; Machinery and Process Patents on pages 478-479

227,757 Continuous band track embedded in rubber. A. Kegresse, 53 Rue Balard, Paris.

227,762 Moisterer for envelopes, employing rubber ring. T. W. Binder, 61A Freitestrasse, Lübeck, Germany.

Published March 18, 1925

227,828 Football. M. Kayser, 42 Poststrasse, Wald, Rhineland, Germany.

227,970 Stocking with elastic gussets. A. J. Norton, The Grange, Earl Shilton, Leicestershire.

227,980 Wind shield wiper with rubber disk. A. Trafford, 94 Bridge street, West, Birmingham.

228,055 Paper-making machine with rubber covered roll. C. Barlow and E. R. Donnacona, Quebec, Canada.

228,121 Endless track vehicle with rubber tread. A. Kegresse, 53 Rue Balard, Paris.

228,149 Pneumatic tire. E. I. Kerns, Springfield, Massachusetts, U. S. A.

Published March 25, 1925

228,219 Rubber plywood cricket bat. H. W. Burrington-Ham, 44 Denbigh street, London.

228,280 Reservoir shaving brush with rubber attachment. F. W. Longworth, Sunnymead, Lowend Grove, Moreton, Cheshire, and W. E. Backhouse, 36 Parkfield Road, Liverpool.

228,323 Kubber vacuum cup massage device. R. S. Thompson, and C. F. Doscher, 43 West 16th street, New York, N. Y., U. S. A.

228,376 Ink bottle stopper with rubber tube. G. Sweetser, 73 Gipsy Hill, Upper Norwood, London.

228,391 Universal coupling. A. Franklin and Self-Sealing Rubber Co., Ltd., Hermetic Works, Hyland street, Birmingham.

228,448 Ventilating means for rubber-proofed coats. S. Miller and I. Miller, 6A King street, Salford, Manchester.

228,463 Suction device for removing coins, which employs a rubber tube. J. C. H. Johnson and R. Johnson, 63 Cecil street, Wavertree, near Liverpool.

228,495 Cushion tire. W. A. Brubaker, 189 Euclid avenue, Akron, Ohio, U. S. A.

228,505 Locking nut employing rubber. T. G. Rennerfelt, 43 Timmermansgatan, Stockholm.

Published April 1, 1925

228,615 Rubber inner sole for shoe, with resilient projections. G. Smith, 388 Essex Road, Islington, London.

228,728 Elastic-band protection for cricket bats. F. Foster, 26 Northgate, Cleckheaton, Yorkshire.

228,762 A hook adapted to be attached by suction to flat surfaces. H. Baumann, Wattwyl, St. Gallen, Switzerland.

New Zealand

Published February 26, 1925

53,341 Inflatable sheep-dipping apparatus. A. C. Stewart, Arrievean, Tyndrum, Perthshire, Scotland.

Germany

Design Patents Issued with Dates of Issue

898,312 (June 25, 1924). Rubber patch for heels. Nollesche Werke, Komm.—Ges., Weissenfels a. d. s.

898,329 (December 3, 1924). Rubber tire. Joh. M. Körting & Söhne, Berlin-Steglitz.

898,333 (December 11, 1924). Rubber tread patch. Wilhelm Reich, Northeim, Hann.

898,359 (January 12, 1925). Rupture band. Ferdinand Abele, Lemathe i. W.

898,371 (January 15, 1925). Fabric shoe with rubber heel and sole. Harburger (Gummiwarenfabrik Phoenix, A.-G., Harburg, Elbe.

898,379 (January 16, 1925). Pressure pneumatic tire for motor cycles. Hessische Gummiwarenfabrik Fritz Peter, Klein-Anheim bei Hanau-am-Main.

898,464 (January 14, 1925). Sponge rubber flower-pot cover. Uebersee-Gummiwerke, A.-G., Wandsbek.

898,498 (January 28, 1925). Footmat and the like of crimped rubber. Gummiwarenfabrik Carl Plaat, Köln-Nippes.

898,499 (January 28, 1925). Insole of crimped rubber. Gummiwarenfabrik Carl Plaat, Köln-Nippes.

898,500 (January 28, 1925). Coin plate and the like of crimped rubber. Gummiwarenfabrik Carl Plaat, Köln-Nippes.

898,501 (January 28, 1925). Small mat of crimped rubber for use between porcelain plates or the like. Gummiwarenfabrik Carl Plaat, Köln-Nippes.

898,502 (January 28, 1925). Baby carriage cover of crimped rubber. Gummiwarenfabrik Carl Plaat, Köln-Nippes.

898,514 (September 19, 1924). Rubber emery wheel. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

898,517 (November 1, 1924). Life belt or cushion of sponge or porous rubber. Klepper-Faltboot-Werke, G. m. b. H., Rosenheim.

898,620 (December 13, 1924). Armor for covers of pneumatic tires. Voltohm; Seil- & Kabelwerke, A.-G., Frankfurt-am-Main.

898,636 (January 8, 1925). Rubber nipple toy. Phil. Penin, Gummiwarenfabrik, A.-G., Leipzig-Plagwitz.

898,637 (January 8, 1925). Sanitary apron. Phil. Penin, Gummiwarenfabrik, A.-G., Leipzig-Plagwitz.

898,760 (January 8, 1925). Rubber panties. Phil. Penin, Gummiwarenfabrik, A.-G., Leipzig-Plagwitz.

898,909 (August 15, 1924). Exchangeable rubber tread patch. Edmund Balke, Wokrenterstrasse 14, Restock.

898,981 (January 24, 1925). Jacket of rubber. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

899,017 (November 10, 1924). Lampshade of rubber. Walter Engelmann, Treysa, Bez. Kassel.

899,076 (January 23, 1925). Rubber cap fastening for hollow glass globes with snow-fall filling. Waldemar Steinrück, Lindengasse 38, Nürnberg.

899,088 (January 26, 1925). Pocket inhaler. Dr. Jan de Booy, Bilthoven, Holland; represented by: A. Rohrbach, Erfurt.

899,153 (January 12, 1925). Shoe with rubber sole and heel and covered through seam. Karl Fielka, Landeshut i. Schl.

899,167 (January 19, 1925). Device for inhaling sprayed liquids. Ohse & Monhscheuer Nachf. Bartels & Rieger, Köln.

899,349 (January 12, 1925). Brassiere of pure rubber. Albin Benndorf, Pausa i. V.

899,350 (January 12, 1925). Pure rubber stocking for varicose veins. Albin Benndorf, Pausa i. V.

899,351 (January 12, 1925). Pure rubber belt, shaped as abdominal binder. Albin Benndorf, Pausa i. V.

899,366 (January 22, 1925). Rubber band. Thoren, Reichert & Co., A.-G., Schwelm i. W.

899,406 (February 24, 1924). Sanitary binder. Leopold Nowak and Johann Nowak, Hersching, Oberbay.

899,555 (January 10, 1925). Rubber hip and abdomen confiner for bathing. Max Cahn & Cahn, Berlin.

899,556 (January 10, 1925). Kubber bust confiner for bathing. Max Cahn & Cahn, Berlin.

899,737 (November 22, 1924). Exchangeable rubber heel. Gustav Retzmann, Allestrasse 4, Gelsenkirchen.

899,811 (January 17, 1925). Seamless rubber tube for high pressure. Hugo Schröder, Gut Altmengehe.

899,821 (January 22, 1925). Rubber sponge combined with a soap bag. Pharmazeutisches Werk A.-G., Barmen.

899,822 (January 22, 1925). Rubber sponge. Pharmazeutisches Werk A.-G., Barmen.

899,870 (January 30, 1925). Rubber non-skid racing tire. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

899,882 (January 30, 1925). Hollow rubber sponge. Uebersee-Gummiwerke A.-G., Wandsbek.

899,924 (December 23, 1924). Pneumatic cushioning for bicycle and motorcycle saddle. Flügel & Polter, Gummiwarenfabrik, Leipzig-Plagwitz.

899,935 (January 19, 1925). Toy bladder. Hannoversche Gummiwerke Excelsior A.-G., Hannover-Limmer.

900,241 (January 17, 1925). Sanitary bandage. Basel & Co., Bad Homburg v. d. H.

900,251 (January 24, 1925). Sanitary binder of towel-cloth with rubberized fabric protector. Therese Köhler, König-Georgstrasse 88, Plauen i. V.

900,266 (January 30, 1925). Inflatable seat or water cushion. Leipziger-Gummi-Waaren-Fabrik A.-G., vorm. Julius Marx, Heine & Co., Leipzig-Grosszschocher.

900,293 (February 3, 1925). Rubber protector for phonograph records. Alfred Block, Witten a. d. Ruhr.

900,400 (February 14, 1925). Tube sponge. Paul Hecker, Vorbergstrasse 13, Berlin-Schöneberg and Friedrich Karl Jähn, Oranienstrasse 194, Berlin.

900,448 (January 19, 1925). Rubber bandage. August Linsel, Breiteweg 236, Magdeburg.

900,486 (February 4, 1925). Atomizer with turbine or propeller. Dr. Oswald Göhring, Bitterfeld.

900,685 (February 5, 1925). Target of rubber. Wilhelm Schlichting, Obotritenring 11, Schwerin i. M.

900,819 (February 10, 1925). Nipple with filling of sponge rubber or the like. H. A. Sierau & Co., Hamburg.

900,864 (February 2, 1925). Brassiere with button-on rubber belt. Willy Goldschmidt, Beuthstrasse 15, Berlin.

Patents Issued with Dates of Issue

410,803 (October 24, 1922). Flexible container of elastic material like rubber, similar particularly to hot water bottles. Robert William Sampson, Malba, New York. Represented by Dr. R. Geissler, Berlin S. W. 11.

410,845 (August 5, 1923). Rubber tread patch. Willy Welter, Friedrichstrasse 31, Halle a. S.

411,287 (July 14, 1923). Milker. Dr. Sylvain Dreyfus, Lausanne, Switzerland. Represented by K. Ranft, Berlin S. W. 61.

411,333 (July 18, 1924). Vapor inhaling apparatus. Salo Cohn, Moltkestrasse 19, Oppeln.

411,342 (October 4, 1923). Channeled horseshoe with rubber inserted. Frederick C. Robertson, Spokane, and Philipp P. Rooney, New York. Represented by G. Hirschfeld, Berlin S. W. 68.

411,394 (March 30, 1924). Catheter. Dr. Otto Kollmann, Finkenstrasse 7, Munich.

411,395 (March 11, 1924). Inhaler. Gustav Köhler, Bad Soden a. Taunus.

411,422 (May 20, 1924). Pneumatic casing. Adolf Sostmann, Grossbeerenstrasse 64, Berlin.

411,441 (March 14, 1922). Fabric as base for pneumatic tires. Jack Potter Stockton, Elizabeth, New Jersey, United States. Represented by Dr. R. Geissler, Berlin S. W. 11.

411,490 (February 6, 1924). Rubber hose or similar rubber article with reinforcing insert. Anton Bett, Pfingstweidstrasse 7, Frankfurt-am-Main.

411,698 (August 28, 1923). Injection syringe. Albert Erbe, Dohnaerstrasse 43, Dresden.

411,830 (May 23, 1924). Air, water cushion or the like. Leo Grossmann, Dorfstrasse 36, Berlin-Mariendorf.

411,907 (May 16, 1924). Rubber soap mat. Hermann Glaser, Linden Allee 41, Cleve.

411,921 (April 17, 1924). Rubber soles and heels. Dr. Rudolph C. G. Staats-Oels, Brooklyn, New York. Represented by W. J. E. Koch and Dr. W. Pogge, Hamburg.

412,201 (November 1, 1923). Pneumatic tire for vehicles. Gonzague de Bellescize, Paris. Represented by K. Osius and Dr. A. Zehden, Berlin S. W. 11.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted March 17, 1925, Act of February 20, 1905

196,346 ARCH-SAFETY—shoes made of rubber, leather, fabric, or combinations of these. Patrick J. Monaghan & Co., Baltimore, Maryland.

196,487 Representation of a boot, a hot water bottle and a tire, and horizontally crossing these the word FUZE-ON, the upper stroke of the F being extended to form a top border line and the last stroke of the N forming a border line at bottom—adhesive compound for welding rubber goods. Fuze-On Rubber Co., Inc., Bath, Maine.

196,513 ANCALITE—rubber insulated electric cables. The Anchor Cable Co., Ltd., London, England.

Granted March 24, 1925, Act of February 20, 1905

196,593 PANDORA—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

196,594 IRIS—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

196,595 WAVO—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

196,596 CAPRICE—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

196,597 MAYFAIR—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

196,598 MILADY—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

196,599 RIALTO—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

Granted March 31, 1925, Act of February 20, 1905

196,890 Two representations of a shoe, in each of which the sole is shown partially ripped off—shoes of leather, rubber, fabric, or combinations of these. John J. Daly, Boston, Massachusetts.

196,922 "HERCULO"—suction pumps, plungers therefor, and suction caps applied thereto. William C. Jones, trading as Herculo Pump Co., Baltimore, Maryland.

Granted April 7, 1925, Act of February 20, 1905

197,010 MARVELASTIK—corsets, brassieres and girdles made of elastic fabric material. Kops Brothers, Inc., New York, N. Y.

197,073 UTILITY—tires and tubes of rubber or rubber and fabric. The Utility Tire & Rubber Co., Akron, Ohio.

197,074 5 EX—belting made of rubber and fabric. The Gutta Percha & Rubber Mfg. Co., New York, N. Y.

197,090 ZIPPER—boots made of rubber and fabric. The B. F. Goodrich Co., New York, N. Y.

197,105 FLEXO—rubber tires. Overman Cushion Tire Co., Inc., New York, N. Y.

197,106 SUPERMATIC—rubber tires. Overman Cushion Tire Co., Inc., New York, N. Y.

197,107 FLEXY—rubber tires. Overman Cushion Tire Co., Inc., New York, N. Y.

197,112 Representation of a shield, above which is the representation of an automobile, the whole being enclosed by a circular border resembling a tire; crossing the shield diagonally downward are the letters C & L, and diagonally upward the words: SERVE YOU WELL—rubber and filler tires, casings, and tubes. Chanslor & Lyon Co., San Francisco, California.

197,113 PIMA—rubber tires. Samson Tire & Rubber Corp., Compton, California.

Granted April 7, 1925, Act of March 19, 1920, Section 1(b)

197,124 CAMBRIDGE, in lightface type—inner tubes, tube repair kits, and blow-out patches. E. G. Hefter, doing business as Cambridge Tire & Rubber Co., St. Louis, Missouri.

The Dominion of Canada

Registered

37,306 HARVA—hot water bottles, fountain syringes, air cushions, pacifiers, ice bags, breast pumps, and nipples. Julius Schmid, Inc., New York, N. Y., U. S. A.

37,436 The words: GOOD and YEAR separated by the symbol of the winged foot of Mercury—rubber tiling. The Goodyear Tire & Rubber Co. of Canada, Ltd., Toronto, Ontario.

New Zealand

Registered

22,072 Representation of two black cats, separating which are the words: KELLY KATS, and beneath a separating line the words: THE TIRES WITH NINE LIVES—tires included in Class 40. Kelly-Springfield Tire Co., New York, N. Y., U. S. A.

22,204 EXPRESS—rubber plates or pads for attachment to soles and heels of boots and shoes. Phillips' Patents, Ltd., 142-146 Old street, London, E. C. 1, England.

22,232 PRESIDENT—garters. President Suspender Co., Shirley, Massachusetts, U. S. A.

The United Kingdom

Published March 11, 1925

B443,929 ANGUS SAXON HOSE—canvas fire hose. George Angus & Co., Ltd., Newcastle-on-Tyne, and The Bentham Woven Hose and Belting Works, Bentham, Lancaster.

454,517 Representation of a globe twirling on a visible axis and separating the words NON STOP—rubber billiard table cushions. The New Liverpool Rubber Co., Ltd., Liverpool.

454,817 RUBFOLITE—electric lamps encased in rubber. Flexible Lamps, Ltd., 102 Wigmore street, London, W. 1.

Published March 18, 1924

B449,230 TRIFLEXED—metal-lined rubber hose with woven fabric cover. Metal Hose & Tubing Co., Brooklyn, New York, U. S. A.

452,483 Within a circular border resembling twisted cording the word: GREYHOUND, with a section of the cording above and beneath it, and beneath this the letter M; around this figure on the outside, the firm's name—boots, shoes, gaiters, galoshes, etc. The Miner Rubber Co., Ltd., Granby, Quebec, Canada.

454,227 BESTINA—goods of rubber and gutta percha exclusively in Class 40. Brown & Brimmell, Ltd., 24 High street, Kingston-on-Thames, Surrey.

454,712 Within a rectangular border the representation of an eagle perched on a disk bearing a representation of a thistle in bloom; above the eagle the word SCOTIA, and beneath the disk the firm's name—waterproof clothing made in Scotland. The North British Rubber Co., Ltd., Castle Mills, Fountainbridge, Edinburgh, Scotland.

Published March 25, 1925

B448,680 REDANGUS BELT—machine belting made of cotton and India rubber, the rubber predominating. George Angus & Co., Ltd., Newcastle-on-Tyne.

455,861 Within a circular border the representation of a girl telephoning; around this on the outside the words: HELLO! ELASTIC, ALWAYS CALL FOR IT—elastic cords, braids, webs, and frills, all of rubber. H. & P. Polak, 8 Chatham street, Manchester.

Published April 1, 1925

454,550 REXEAN, the X and the middle E being joined at the center of the word, and larger than the rest of the letters, which are graded in size so that the smallest are on the ends—all goods in Class 40 except tires and tubes or similar items. The Rexean Co., Ltd., 141 Lord street, Southport.

Designs

The United States

66,798 Tire tread. Term 14 years. R. W. Hutchens, assignor to Gillette Rubber Co., both of Eau Claire, Wisconsin.

66,805 Tire tread. Term 14 years. F. A. Richards, assignor to Gillette Rubber Co., both of Eau Claire, Wisconsin.

66,870 Pneumatic tire. Term 14 years. H. C. Miller, Akron, and J. D. Tew, Hudson, both in Ohio, assignors to The B. F. Goodrich Co., New York, N. Y.

66,952 Shoe sole. Term 14 years. G. L. Pierce, Brooklyn, assignor to A. G. Spalding & Bros., New York, N. Y.

66,967 Tire tread. Term 14 years. L. E. Dillon, Jefferson, South Dakota.

The Dominion of Canada

6,572 Tire tread. Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec.

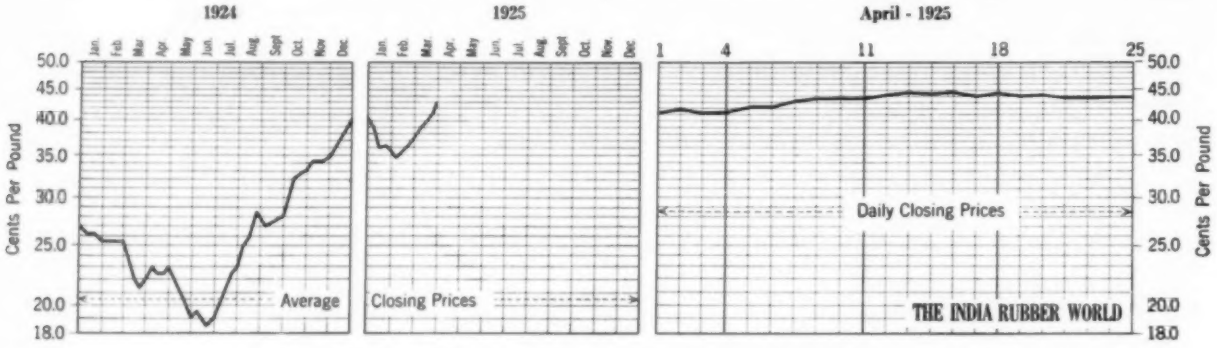
6,582 Rubber sole. W. R. Wood, Sault Ste. Marie, Ontario.

6,584 Combined candy and toy consisting of a lump of candy on a stick, with a squawker and balloon at the opposite end of the stick. The Kelly Confection Co., Ltd., Vancouver, British Columbia.

6,608 Overshoes or galoshes. Kaufman Rubber Co., Ltd., Kitchener, Ontario.

6,609 Overshoes or galoshes. Kaufman Rubber Co., Ltd., Kitchener, Ontario.

6,610 Overshoes or galoshes. Kaufman Rubber Co., Ltd., Kitchener, Ontario.



Ratio Graph of New York Closing Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York

THE crude rubber market gained strength the entire month due to its strong statistical position and the weekly reduction of London stocks to meet the demand for spot rubber. The market has been erratic, with the interests of buyers somewhat in conflict. Ribbed smoked sheets rose steadily from 41¼ cents buyers, 41½ cents sellers, on April 1, to 44½ cents buyers, 44¾ cents sellers, April 16. These prices are the highest since April, 1920, and were well maintained owing to the strong factory interest in spot and nearby.

Erratic conditions marked the first week of the month and the market the succeeding week was firm with good consuming demand. Spot and nearby were very scarce and factories were inquiring for April-May rubber. Spot was held at a premium of ¼ cent a pound.

Following Easter the market held firm and quiet for the week, with very little nearby rubber offered in trade or for shipment from the East. Consumers were not placing orders even for early futures. The next week was marked by very steady conditions featured by scattered trading among the dealers on fractional fluctuations. In the last week dealers were eager buyers for May rubber to be shipped from the East.

The general belief that tire production will continue unabated through May, and possibly June, and that factories in all divisions of the industry are purchasing mostly for current or nearby consumption will, in conjunction with the low London stocks, maintain the market at a high level. This, however, will result in further release of rubber under the Stevenson plan for the third quarter, which will relieve the tension and obviate further shortage.

Probable shipments of rubber from the Far East have been estimated at 35,000 tons in April; 33,000 tons in May, and 28,000 tons in June. Included in the May estimate are 2,700 tons delayed in transit and transferred owing to accident to a cargo steamer in the Suez Canal.

The monthly record on ribbed smoked sheet futures showed advances from April 1, as follows:

April 1, 41 buyers, 41¼ sellers; May-June, 40¾ buyers, 41 sellers; July-September, 39¾ buyers, 40 sellers; October-December, 39¼ buyers, 39½ sellers.

April 25, April, 43⅝ buyers, 43⅞ sellers; May-June, 43¼ buyers and sellers; July-September, 41¼ buyers, 41½ sellers; October-December, 40 buyers and sellers.

Parás were steady and neglected. Balatas very quiet.

In sympathy with the very firm tone of the market for plantations the Antwerp auction of about 140 tons of Congo grades developed keen competition and good prices.

Importations of all grades during March, 1925, were 33,914 tons, compared with 17,752 tons one year ago. Plantation arrivals for March were 31,067 tons, compared with 16,009 tons one year ago. Total importations of plantation rubber for three months ended March 31 were 81,287 tons, compared with 66,597 tons for the corresponding period of 1924. Total importations of all grades of rubber for the three months ended March 31 were 87,330 tons, compared with 71,126 tons for the corresponding period of last year.

PLANTATION, April 1. Spot first latex crêpe, 41½-41¾ cents; April, 41¼-41½ cents; May-June, 40¾-41 cents; July-Sept., 39¾-40 cents; Oct.-Dec., 39¼-39½ cents.

April 25. Spot first latex crêpe, 44¼ cents; April, 44¼ cents; May-June, 43 cents; July-Sept., 41½ cents; Oct.-Dec., 40 cents.

April 1. Spot ribbed smoked sheets, 41¼-41½ cents; April, 41-41¼ cents; May-June, 40¾-41 cents; July-Sept., 39¾-40 cents; Oct.-Dec., 39¼-39½ cents.

April 25. Spot ribbed smoked sheets, 44 cents; April, 44 cents; May-June, 43 cents; July-Sept., 41½ cents; Oct.-Dec., 40 cents.

April 1. Spot No. 2 amber crêpe, 41-41¼ cents: April, 40½-40¾ cents; May-June, 39⅞-40 cents; July-Sept., 38¼-39 cents; Oct.-Dec., 38¼-38½ cents.

New York Spot Closing Rubber Prices

PRICES IN CENTS, PER POUND

PLANTATIONS	March, 1925														April, 1925										
	16	17	18	19	20	21	23	24	25	26	27	28	30	31	1	2	3	4	6	7	8	9	10*	11†
Sheet																								
Ribbed smoked	40⅝	40½	41	41¼	41⅜	41⅞	42½	42⅞	43½	43½	43⅝	43½	44⅛	43	41¼	41⅞	41¼	41⅜	42⅛	42⅛	43⅛	43⅝	....	....
Crêpe																								
First latex	41¼	41	41⅜	41⅝	42	42¼	42¼	43¼	43¼	43⅜	43⅝	44⅛	43	41⅝	42⅛	41¾	41⅜	41⅝	42⅛	42⅛	43⅛	43⅝	....	....
Off latex	40½	40½	41	41⅛	41⅜	41⅞	42¼	42⅞	43¼	43⅛	43¼	43¼	43⅞	42⅝	41⅞	41¾	41	41¼	41⅞	42	42⅞	43⅜	....	....
No. 2 blanket	40⅛	40½	40¾	41	41⅛	41⅜	42⅛	42⅛	42¾	42¾	43⅛	43	43¼	42⅜	41⅛	41⅜	40½	41	41½	41⅝	42⅛	42⅞	....	....
No. 3 blanket	40	40¼	40⅝	40¾	40⅞	41½	41⅞	42⅛	42½	42½	42⅞	43	42⅛	42⅛	40¾	41⅛	40½	40¾	41⅜	41⅜	41⅞	42⅛	....	....
No. 4 blanket	39⅝	39⅞	40⅛	40½	40½	41	41½	41⅞	42¼	42	42⅛	42⅛	42⅝	41⅞	40½	40⅞	40⅜	40½	41⅛	41	41½	42¼	....	....
Thin, clean brown	40⅛	40½	40⅝	40¾	41	41½	41⅞	42	42½	42⅜	43	42⅛	43⅛	42⅛	40⅝	41½	40⅝	40¾	41⅜	41⅜	42	42⅝	....	....
Specky brown	39⅝	39½	40⅛	40¼	40½	41	41½	41⅝	42	42⅛	42⅛	42⅜	42⅝	41⅞	40⅛	40⅞	40¼	40⅜	41⅛	40¾	41⅝	42⅛	....	....
Rolled brown	38½	38⅞	39	39¼	39½	40⅜	40⅜	40⅞	41⅛	41⅛	41⅛	41¾	41⅞	41	39¼	40½	40	40⅜	40	40	41⅛	41⅝	....	....

*Holiday. †Market closed.

April 25. Spot No. 2 amber crêpe, 43½ cents; April, 43½ cents; May-June, 42½ cents; July-Sept., 41 cents; Oct.-Dec., 39½ cents.

April 1. Spot No 1 rolled brown crêpe, 40½-40½ cents; April, 40-40¼ cents; May-June, 39½-39¾ cents; July-Sept., 38⅞-39 cents; Oct.-Dec., 38-38¼ cents.

April 25. Spot No. 1 roll brown crêpe, 42 cents; April, 42 cents; May-June, 41 cents; July-Sept., 40 cents; Oct.-Dec., 38½ cents.

SOUTH AMERICAN PARAS AND CAUCHO. April 1, Spot, upriver fine, 36-36½ cents; islands fine, 32¾-33 cents; upriver coarse, 29½-29⅝ cents; Cametá, 18 cents; caucho ball, 31¼-31¾ cents.

April 25. Spot, upriver fine, 37¼ cents; islands fine, 35 cents; upriver coarse, 31 cents; Cametá, 30 cents; caucho ball, 31-32 cents.

London

The London market for March began the month very erratic, due to activities of speculators. Large shipments continued to be made each week to fill April requirements in New York. Immediately following the Easter holidays spot rubber reached its highest price since 1920, at 21¾ pence, sellers. The succeeding two weeks the market was generally quiet and prices declining.

The weekly reports of London stocks show continued reduction owing to the scarcity of spot rubber elsewhere caused by general hand to mouth buying by manufacturers. The record of weekly stocks is as follows: March 30, 18,018 tons; April 6, 16,517 tons; April 13, 15,489 tons; April 20, 14,571 tons; April 27, 13,058 tons.

Singapore

The month's market opened rather weak but gained in strength and activity both previous to and following the Easter holidays. A decline began on April 21, due to absence of London support, the week closing at 20⅜ pence, buyers.

New York Quotations

Following are the New York spot rubber quotations, for one year ago, one month ago, and April 25, the current date:

	April 25, 1924	March 24, 1925	April 25, 1925
Plantation Hevea			
Rubber latex (Hevea) *per gal.*	$1.30@	$1.50@	$1.75@$2.00
CREPE			
First latex	.24 @	.43¾@	.44¼@
Off latex	.23¾@	.43½@	.44 @
Amber No. 2	.23¾@	.42½@	.43½@
Amber No. 3	.22½@	.42¼@	.43¼@
Amber No. 4	@	.42½@	.43 @
Brown, clean, thin	.22½@	.42¾@	.43½@
Brown, specky	.21½@	.42 @	.43 @
Brown, roll	.21⅜@	.41 @	.42½@
Sole crêpe	@	@	.48½@
SHEET			
Smoked, ribbed	.23 @	.43 @	.44 @
East Indian			
PONTIANAK			
Banjermassin	.07¼@	.07½@.08	.08 @
Palembang	.07½@	.08 @	.08½@
Pressed block	.13 @	.13 @.13½	.13¼@.14
Sarawak	.07 @	07 @	.08 @
South American			
PARAS			
Upriver, fine	.20¾@	.36¼@	.37¼@
Upriver, fine	*.29 @	*.47¾@	*.48½@
Upriver, medium	.18 @	.34½@	.35 @
Upriver, coarse	.16 @.16½	.29½@	.31 @
Upriver, coarse	*.25 @	*.40 @	*.44 @
Islands, fine	.16½@.17	.24 @	@
Islands, medium	.17½@	@	@
Islands, coarse	.11½@	@	@
Cametá	.12 @	@	@
Acre Bolivian, fine	.20¾@	.36¾@	.37½@
Acre Bolivian, fine	*.29 @	*.48 @	*.49 @
Beni Bolivian	.20¾@	.37 @	.37½@
Madeira, fine	.21½@	.37½@	.38 @
Peruvian, fine	.19¾@	@	¾
Tapajos, fine	.19 @.19¾	@	.36 @
CAUCHO			
Upper caucho ball	@	.31¾@	.32 @
Upper caucho ball	*.26 @	*.40¾@	*.44½@
Lower caucho ball	@	.30 @	.31 @
Maniçobas			
Ceará negro heads	.19 @	.28 @	.30 @
Ceará scrap	.08 @	.16 @	.24 @
Maniçoba 30% guaranty	.16 @	.27 @	.30 @
Mangabeira, thin sheet	.21 @	.29 @	.27½@

	April 25, 1924	March 24, 1925	April 25, 1925
Centrals			
Central scrap	.16 @	.32 @	.32 @
Central wet sheet	.14 @	.22 @	.25 @
Corinto scrap	.16 @	.32 @	.32 @
Esmeralda sausage	.16 @	.32 @	.32 @
Guayule washed and dried	.24 @	.35 @	.35 @
Africans			
Black Kasai	.18 @	.37½@	.38 @
Black Upper Congo	.15 @	.37½@	.37 @
Red Upper Congo	.20 @	.32½@	.36 @
Kasai Loanda	@	.33½@	.36¼@
Upper Congo Arumini	@	35 @	@
Masai (Konakry)	@	@	.30½@
Gutta Percha			
Gutta Siak	.16 @.17	.17½@	.17¼@.18
Gutta Soh	.29 @	.29 @	.28 @
Red Macassar	3.00 @	3.00 @	3.00 @ 3.50
Balata			
Block, Ciudad Bolivar	.65 @.66	.70 @	.67 @
Colombia	.59 @.60	.56 @	.55 @
Panama	.59 @.60	.55 @	.54 @
Surinam, sheet	.74 @	.78 @	.77 @
amber	.76 @	.81 @	.83 @
Chicle			
Honduras	‡.64 @.65	‡.58 @.68	‡.58 @.68
Yucatan, fine	‡.67 @.67½	‡.58 @.68	‡.58 @.68

*Washed and dried crêpe. Shipment from Brazil.
‡Duty paid.

Comparative Low and High New York Spot Rubber Prices

	April 1925*	April 1924	April 1923
PLANTATIONS			
First latex crêpe	$0.41½ @$0.45¼	$0.22⅜@$0.24	$0.31¼@$0.34½
Smoked sheet, ribbed	.41¼ @ .44¾	.22 @ .23⅛	.31¼@ .34½
PARAS			
Upriver, fine	.36 @ .37½	.19 @ .21	.28½@ .30¾
Upriver, coarse	.29¼@ .30¾	.16 @ .17½	.26½@ .28½
Islands, fine	.32½@ .33	.16 @ .17	.26¼@ .29
Islands, coarse		.09¼@ .11¼	.15 @ .22
Cametá	.17½@ .18	.11¼@ .12	.15 @ .17

*Figured to April 25, 1925.

British Malaya

Rubber Exports in March

An official cablegram from Singapore to the Malay States Information Agency, London, states that the rubber exported from British Malaya in March totaled 26,836 tons. The amount of rubber imported was 13,399 tons, of which 10,962 tons were declared as wet rubber.

The following are comparative statistics:

	1924		1925	
	Gross Exports, Tons	Foreign Imports, Tons	Gross Exports, Tons	Foreign Imports, Tons
January	23,844	8,867	19,183	10,132
February	19,395	7,440	21,622	10,071
March	22,294	8,269	26,836	13,399
Totals	65,533	24,576	67.641	33,602

Distribution

DESTINATION	February, 1925 Tons	March, 1925 Tons
United Kingdom	2,971	2,616
United States	15,240	20,716
Continent of Europe	2,204	2,236
British Possessions	610	443
Japan	564	813
Other foreign countries	33	12
Totals	21,622	26,836

Dealers' Stocks of Rubber

A telegram from Singapore to the Malay States Information Agency, 88 Cannon Street, London, E. C. 4, England, states that dealers' stocks of rubber on March 31 last were in Singapore 14,751 tons and in Penang 2,510 tons.

ENGLAND CONTINUES TO LEAD OTHER COUNTRIES IN IMPORTATIONS of American-made rubber boots, the figures in January, 1925, for this class of goods being 96,956 pairs, value $180,380.

Reclaimed Rubber

Reclaiming plants are operating at capacity production in the effort to meet the heavy demand from manufacturers of rubber goods. The pronounced advance in the price of crude rubber of all sorts has stimulated interest in the technical and economic value of reclaims, with the result that they are accorded their proper places in the manufacture of automobile tires, inner tubes, heels, footwear, mechanical goods, insulation, etc. This is particularly true of super-reclaims and other high grades of recent development.

Reclaims in general are not advancing in price because of the over supply and extremely low prices for scrap and competitive influences among reclaimers.

New York Quotations

April 25, 1925

Auto Tire			
Black	lb.	$0.08¾ @	.09
Black, washed	lb.	.10¼ @	.10¾
Dark gray	lb.	.09¾ @	.10
Light gray	lb.	.11⅛ @	.11½
White	lb.	.14½ @	.15
High Tensile Black			
Super-reclaim, No. 1	lb.	.17 @	.17¼
No. 2	lb.	.12 @	.12½
Shoe			
Unwashed	lb.	.08¾ @	.09⅛
Washed	lb.	.12½ @	.12¾
Tube			
No. 1	lb.	.15¼ @	.15½
No. 2	lb.	.11½ @	.12⅛
Uncured Tire Friction			
No. 1	lb.	.28 @	.30
No. 2	lb.	.22 @	.24
Miscellaneous			
High grade, red	lb.	.13½ @	.14
Truck tire	lb.	.08½ @	.09
Mechanical blends	lb.	.05 @	.06½

Plantation Rubber Exports from Dutch East Indies

Java and Madura

	Year		January	
	1923 Kilos	1924 Kilos	1924 Kilos	1925 Kilos
To—				
Netherlands	2,863,000	3,435,000	206,000	127,000
Great Britain	5,734,000	7,059,000	680,000	390,000
Germany	329,000	406,000	42,000	116,000
France	442,000	259,000	9,000	6,000
Belgium	17,000	25,000	.....	6,000
Italy	288,000	365,000	22,000	67,000
Canada	54,000	4,000	.....	.....
United States	22,028,000	27,967,000	1,873,000	2,131,000
Singapore	1,537,000	2,831,000	276,000	108,000
Sweden	.....	.....	.....	3,000
Hongkong	.....	27,000	.....	.....
Japan	601,000	754,000	137,000	11,000
Australia	185,000	251,000	22,000	3,000
Other countries	.....	8,000	.....	.....
Totals	34,078,000	43,391,000	3,267,000	2,968,000
Ports of Origin:				
Tandjoenpriok	14,374,000	16,624,000	1,133,000	1,219,000
Tjerebon	70,000	73,000	.....	17,000
Samarang	2,339,000	3,049,000	172,000	266,000
Sourabaya	12,792,000	17,546,000	1,510,000	1,249,000
Pasuruan	1,204,000	1,311,000	103,000	36,000
Probalingga	743,000	1,279,000	95,000	82,000
Panarukan	1,192,000	1,462,000	53,000	102,000
Banjuwangi	809,000	926,000	65,000	74,000
Tjilatjap	547,000	1,118,000	187,000	57,000

Belawan-Deli

	Year		January	
	1923 Kilos	1924 Kilos	1924 Kilos	1925 Kilos
To—				
Netherlands	1,828,000	1,697,000	170,000	150,000
Great Britain	4,214,000	5,601,000	298,000	681,000
Germany	200,000	474,000	.....	70,000
France	417,000	256,000	.....	12,000
Belgium	204,000	27,000	5,000	.....
Italy	335,000	222,000	20,000	29,000
United States	27,754,000	30,391,000	2,727,000	1,988,000
Singapore	2,421,000	952,000	87,000	71,000
Straits Settlements	152,000	.....	.....	.....
Penang	615,000	1,097,000	106,000	106,000
Australia	4,000	34,000	.....	.....
Other countries	34,000	142,000	1,000	.....
Totals	38,178,000	40,893,000	3,414,000	3,107,000

The Market for Rubber Scrap

The steady advance in crude rubber has benefited the scrap rubber market. A month ago scrap business was slow at firm prices. In the interval since then the outlook has improved with expanding demand and increase of inquiries. The principal grades have advanced in prices and are firmly held in anticipation of overdue consuming demand indicated by the better movement during April of the leading rubber scrap grades.

BOOTS AND SHOES. Early in the month business was not active in this grade but buying by consumers gained distinctly in volume at slightly better prices during the following weeks.

INNER TUBES. Export business to French and German ports developed and prices rose ¼ cent a pound for mixed tubes. Prices are holding up well on consumers' requirements.

MIXED TIRES. Movement of mixed tires has been more active toward Akron than to other reclaiming centers. Business in tire scrap grades has held up well, with tendency toward better prices.

AIR-BRAKE AND MECHANICAL SCRAPS. These grades remain generally inactive although some activity has been noted in air-brake hose.

Quotations for Carload Lots

April 25, 1925

Boots and Shoes			
Boots and shoes, black	lb.	$0.02	@$0.02⅜
Red and white	lb.	.01¼ @	.01⅜
Trimmed arctics, black	lb.	.01⅜ @	.01⅝
Untrimmed arctics	lb.	.01¼ @	.01⅜
Tennis shoes and soles	lb.	.01 @	—
Hard Rubber			
No. 1 hard rubber	lb.	.11 @	.12
Battery jars, black compound	lb.	.02 @	.03
Inner Tubes			
No. 1 floating	lb.	.05½ @	.05⅝
No. 2, compounded	lb.	.03½ @	.03¾
Red	lb.	.03 @	.03¼
Mixed tubes	lb.	.03¼ @	—
Mechanicals			
Mixed black scrap	lb.	.01 @	.01¾
Heels	lb.	.00½ @	.00¾
Hose, air-brake	ton	20.00	@22.00
regular	ton	17.00	@20.00
No. 1 red	lb.	.02 @	—
No. 2 red	lb.	.01¼ @	—
Red packing	lb.	.00¾ @	—
White, druggists' sundries	lb.	.02½ @	—
Mechanical	lb.	.01 @	—
Tires			
Pneumatic Standard—			
Mixed auto tires with beads	ton	18.50	@20.00
Beadless	ton	24.00	@26.00
White auto tires with beads	ton	21.00	@23.00
Beadless	ton	36.00	@40.00
Mixed auto peelings	ton	30.00	@35.00
Solid—			
Mixed motor truck, clean	ton	35.00	@41.00

RUBBER PRODUCTION AND CONSUMPTION—1925

According to figures compiled by the Crude Rubber & Foreign Produce Corporation, 250 West 57th street, New York, N. Y., F. R. Henderson, president, the world production of crude rubber in 1925 will be 456,341 tons, which amount added to 158,100 tons, the figure for world stocks December 31, 1924, totals 614,441 tons. The world consumption, estimated at 110 per cent of 1924, is 518,100 tons, while the total rubber in the world on December 31, 1925, including stocks afloat and Far Eastern stocks, is placed at 96,341 tons.

EXPORTS FROM SOUTH INDIA

Exports of rubber from South Indian ports during the year 1924 were 10,151,636 pounds; of this 4,636,335 pounds went to Ceylon, 4,490,923 pounds to the United Kingdom, and 869,597 pounds to America.

The Market for Chemicals and Compounding Ingredients

New York

DELIVERIES of compounding ingredients generally to rubber plants continue in satisfactory volume. Rubber manufacturers, in practically all lines, are busy but are not ordering supplies very far ahead. They are, however, stocking from two to four weeks ahead as a matter of prudence. This they are able to do largely because of the dependability of quick freight movement.

ACCELERATORS. The familiar accelerators are well established in current rubber manufacturing practice and afford steady business for those producing them. The various ultra-accelerators are gaining ground in many new directions, notably in dry heat vulcanization, where certain of them have successfully displaced litharge in shoe stocks, shortening the cure to a third the time formerly required.

BENZOL. Excellent demand early in April was followed by unsettled conditions, weakness and price reduction.

CARBON BLACK. Supplies were freely taken by the rubber trade early in the month. The spot market later became slow with the advance of ½ cent per pound in bags at producers' works. This advance was anticipated because selling prices were driven below proper levels as a result of a price war among many of the Louisiana factors. Makers are reported carrying a large volume of contracts placed early in the year at prices considerably under present levels.

CLAYS. Special compounding clays are now well established in current rubber manufacturing practice in tire treads, mechanicals, etc., and are steadily moving in carload lots even under routine conditions.

LITHARGE. About the middle of the month powdered litharge was reduced 1¼ cents a pound and ¼ cent in steel kegs.

SOLVENT NAPHTHA. Supplies continue in small volume with prices well maintained and demand active.

SUBLIMED LEAD. Prices have been reduced ½ cent a pound early in April.

WHITING. All grades are in routine movement at very low prices.

ZINC OXIDE. Prices have held steady at previous levels with steady requisitions for supplies of this material from the rubber trade.

Accelerators, Inorganic

Lead, carbonate	*lb.*	$0.10¾	@
Lead, red	*lb.*	.11¾	@
sublimed blue	*lb.*	.10¼	@
sublimed white	*lb.*	.10¼	@
Lime, flour	*lb.*	.01¾	@ .02¼
R. M. (factory)	*lb.*	.01¼	@
R. M. hydrated	*ton*	15.00	@
superfine	*lb.*	.01½	@ 0.02
Litharge	*lb.*	.11¾	@ .13
Magnesia, carbonate	*lb.*	.07½	@
calcined, light (bbls.)	*lb.*	.24	@ .45
calcined, ex. light (bbls.)	*lb.*	.40	@
calcined, md. light (bbls.)	*lb.*	.15	@
calcined, heavy (bbls.)	*lb.*	.03½	@ .06¾
magnesium, carbonate, light	*lb.*	.07	@
Orange mineral A.A.A.	*lb.*	.14	@
Rubber lead	*lb.*	.10	@

Accelerators, Organic

A-7	*lb.*	.70	@ .80
A-19	*lb.*	.80	@ .90
Accelemal	*lb.*	.30	@
Aldehyde ammonia powder	*lb.*	.95	@
Anhydro formaldehyde aniline	*lb.*	.38	@
Anhydroformaldehyde-para-toluidine	*lb.*	1.11	@
Aniline (factory)	*lb.*	.17	@ .17½
sulphate	*lb.*		@
Benzidine (base)	*lb.*	.75	@ .78
Benzyl aniline	*lb.*	.55	@
Cryline	*lb.*	.60	@
paste	*lb.*	.60	@
powder	*lb.*	.35	@
D. P. G. salt	*lb.*	.89	@
Diethyl amine	*lb.*	2.20	@
Dimethyl amine	*lb.*	2.75	@
Dimethylaniline	*lb.*	.33	@ .36
Di-ortho-tolylguanidine	*lb.*	1.26	@
Di-ortho-tolylthiourea	*lb.*	.32	@
Diphenyl guanidine	*lb.*	1.05	@ 1.10
Ethyl aniline	*lb.*	.70	@
Ethylidene aniline	*lb.*	.75	@
Ethyl-o-toluidine	*lb.*	.70	@
Excellerex	*lb.*	.35	@ .38
Formaldehyde aniline	*lb.*	.42½	@
Heptene	*lb.*	1.50	@
Hexamethylene tetramine	*lb.*	.85	@
Lead oleate (fac'ty)	*lb.*	.16	@
Methylene aniline	*lb.*	.43	@ .48
Methylenedianilide	*lb.*	.40	@
No. 999	*lb.*	.17	@
Shawinigan paraldehyde	*lb.*	.17	@ .19
Para-nitrosodimethylaniline	*lb.*	.99	@
Paraphenylene diamine	*lb.*	1.25	@ 1.30
Quinodine	*lb.*	.40	@
Super-sulphur, No. 1	*lb.*	.50	@
No. 2	*lb.*	.20	@ .30
Tensilac No. 39	*lb.*	.80	@
No. 40	*lb.*	.75	@
Thiocarbanilide	*lb.*	.26	@ .33
Trimene	*lb.*	.75	@
Trimene base	*lb.*	1.40	@
Triphenylguanidine	*lb.*	.75	@
Tuads	*lb.*	4.50	@ 6.00
Vulcone	*lb.*	.89	@

New York Quotations

April 25, 1925

Acids

Acetic 28% (bbls.)	100 *lb.*	$3.12	@$3.38
glacial (carboys)	*lb.*	.16	@
Cresylic (95% straw color)	*gal.*	.62	@ .64
(95% dark)	*gal.*	.58	@ .60
Sulphuric, 66° (carboys)	*lb.*	.02	@

Alkalies

Caustic soda	100 *lbs.*	3.10	@ 4.56
flake, 76% (factory)	100 *lbs.*	3.60	@ 4.31
solid, 76% (factory)	100 *lbs.*	3.20	@ 3.91

Colors

BLACK

Bone	*lb.*	.08	@ .10
Carbon:			
A. & W. nonfli	*lb.*	.40	@
Acrfloted arrow	*lb.*	.06½	@ .11
Compressed	*lb.*	.06	@ .11
Uncompressed	*lb.*	.06	@ .10
Micronex	*lb.*	.08	@ .12
Lampblack	*lb.*	.10	@ .14
Shawinigan	*lb.*	.12	@ .14
Thermatomic carbon	*lb.*	.04	@

BLUE

Cobalt	*lb.*	.21	@ .26
A. & W. blue	*lb.*	2.00	@ 4.00
Prussian	*lb*	.40	@ .50
Ultramarine	*lb.*	.10	@ .35

BROWN

Iron oxide	*lb.*	.04½	@ .06
Sienna, Italian	*lb.*	.05½	@ .06½
Umber, Turkey	*lb.*	.04½	@ .05

GREEN

Chrome, light	*lb.*	.27	@ .29
medium	*lb.*	.29	@ .30
dark	*lb.*	.31	@ .34
commercial	*lb.*	.10	@ .10½
tile	*lb.*	.13	@ .15
A. & W. green	*lb.*	2.00	@ 3.00
Oxide of chromium	*lb.*	.34	@ .51
T. K.	*lb.*	.40	@ .45

RED

Antimony, golden	*lb.*	.20	@
golden T. K.	*lb.*	.18	@ .22
golden R.M.P. No. 7	*lb.*	.20	@
golden pentasulphide, T. K.	*lb.*	.33	@ .35
golden, 15/17% G. F.	*lb.*	.20	@ .22
golden, 15/17% F. S.	*lb.*	.18	@
golden, No. 1	*lb.*	.30	@
golden, No. 2	*lb.*	.20	@
Antimony, crimson	*lb.*	.42	@ .45
crimson T. K.	*lb.*	.45	@ .50
crimson, 15/17% G. F.	*lb.*	.40	@ .45
crimson, 15/17% F. S.	*lb.*	.39	@
crimson, R.M.P. No. 3	*lb.*	.50	@
crimson F.	*lb.*	.45	@
7-A	*lb.*	.35	@
Z-2	*lb.*	.20	@
Vermilion, 5% F. S.	*lb.*	.65	@

RED—*Continued*

Antimony			
Vermilion 15/17% F.S.	*lb.*	$0.50	@
Arsenic, red-sulphide	*lb.*		@
A. & W. red (4 shades)	*lb.*	1.50	@ 3.00
purple	*lb.*	2.00	@ 3.00
Iron oxides			
domestic	*lb.*	.12	@
English	*lb.*	.11½	@
English Indian	*lb.*	.10	@ .13
Indian, pure	*lb.*	.06	@ .13
pure bright	*lb.*	.11	@ .14
reduced	*lb.*	.07	@ .10
Spanish	*lb.*	.02½	@ .04
Levigated, waterfloated	*lb.*	.02¾	@
Venetian	*lb.*	.02	@ .05½
Oximony	*lb.*	.13½	@
Pará toner	*lb.*	.90	@ 1.00
Toluidine toner	*lb.*	1.95	@ 2.25
Vermilion, English	*lb.*	1.35	@
quicksilver	*lb.*	1.50	@ 1.60

WHITE

Akcolith	*lb.*		@
Albalith	*lb.*	.06¾	@ .06¾
Aluminum bronze	*lb.*	.60	@ 1.25
Lithopone	*lb.*	.05¾	@ .06
Sterling	*lb.*	.06¾	@ .06¾
Azolith	*lb.*	.06¼	@ .06¾
Imported prime	*lb.*	.06¾	@ .07¼
Red seal, imported	*lb.*		@
T. O. pigment	*lb.*	.15	@ .17
Zinc oxide			
AAA, lead free	*lb.*	.08	@ .08¼
Azo (factory):			
ZZZ (lead free)	*lb.*	.07¼	@ .08¼
ZZ (5% leaded)	*lb.*	.06¾	@ .07¼
Z (8.10% leaded)	*lb.*	.06¾	@ .07¼
French process, Florence brand			
Green seal	*lb.*	.10¾	@ .11¼
Red seal	*lb.*	.09¾	@ .10¼
U. S. P.	*lb.*	.15	@ .16½
White seal	*lb.*	.11¼	@ .12¼
Horse Head brands			
Selected	*lb.*	.08½	@ .08¾
Special	*lb.*	.08½	@ .08¾
XX red	*lb.*	.08	@ .08¼
Leaded brands			
Lehigh	*lb.*	.07¼	@ .07½
Standard	*lb.*	.07¼	@ .07¾
Sterling	*lb.*	.07¼	@ .07½
Superior	*lb.*	.07¼	@ .07¾
Palmerton process			
Kadox, black	*lb.*	.10¾	@ .11¼
blue	*lb.*	.09¾	@ .10¼
red	*lb.*	.08¾	@ .09¼
Snow white	*lb.*		@

YELLOW

Arsenic	*lb.*	.65	@ .75
Chrome	*lb.*	.18	@ .21
A. & W. yellow	*lb.*	2.50	@ 4.00
India rubber	*lb.*	.75	@
Ochre, domestic	*lb.*	.02	@ .02½
imported	*lb.*	.03¼	@ .04

Compounding Ingredients

Aluminum flake (sacks C. L.)	*ton*	$21.85	@
(sacks L. C. L.)	*ton*	24.50	@
Ammonia carbonate	*lb.*	.14½	@ .16
Asbestine	*ton*	13.00	@25.00
Aluminum silicate	*ton*	23.00	@25.00
Barium, carbonate (bbl.)	*ton*	54.00	@56.00
dust	*lb.*	.05	@
Barytes, imported white	*ton*	28.00	@30.00
pure white	*ton*	30.00	@35.00
O.C.X., off color	*ton*		@
water ground and floated	*ton*	23.00	@26.00
Basefor	*lb.*	.04½	@
Blanc fixe	*lb.*	77.50	@80.00
Carrara filler (factory)	*lb.*	.01¼	@ .02
Chalk, precip. extra light	*lb.*	.04½	@ .05
heavy (f.o.b. factory)	*lb.*	.03½	@ .04
Clay, Dixie	*ton*	20.00	@35.00
Blue ribbon (C. L. facty.)	*ton*	14.00	@
Blue Ridge	*ton*	12.00	@24.00
Catalpo (facty.)	*ton*	38.00	@40.00
China	*lb.*	.01½	@
China, L. H. B.	*ton*	13.00	@22.50
English, L. H. B.	*lb.*	.02½	@ .02¾
Langford	*ton*	12.00	@22.00
Cotton flock, black	*lb.*		@
light-colored	*lb.*		@
white	*lb.*		@
Cotton linters clean mill-run	*lb.*	.04½	@
Fossil flour (powdered)	*ton*		@
(bolted)	*ton*		@
Glue, high grade	*lb.*	.21	@ .29
medium	*lb.*	.19	@ .25
low grade	*lb.*	.15	@ .18
Graphite, flake	*lb.*	.06½	@ .12
Infusorial earth (pow'd)	*lb.*	.03½	@
(bolted)	*ton*		@
Lime (bolted)	*lb.*	.01½	@ .02
Mica, amber	*lb.*	.05	@
powdered	*lb.*		@
white	*lb.*		@
Pumice stone, powd.	*lb.*	.03	@ .05
Rotten stone (bbls.)	*lb.*	.02½	@ .04½
Slate flour (facty.)	*ton*	8.50	@15.00
Soap bark, cut	*lb.*	.09½	@ .10
Soapstone	*ton*	15.00	@25.00
Sodium bicarbonate (bbls.)	100 *lbs.*	2.00	@
Starch, powd. corn			
Buffalo (bbls.)	100 *lbs*	4.14	@ 4.24
(bags)	100 *lbs.*	3.87	@ 3.97
Talc, soapstone	*ton*	15.00	@20.00
Terra blanche	*ton*	25.00	@30.00
Whiting, domestic No. 33	*ton*	10.00	@
chalk, L. H. B.	*ton*	16.00	@25.00
commercial (facty.)	100 *lbs.*	.90	@ 1.00
English, imported	*lb.*	.01¼	@
English, cliffstone (factory)	100 *lbs.*	1.50	@ 3.50
Georgia calcite	*ton*		@
gildera (bolted)	100 *lbs.*	1.25	@ 1.35
Nelco	*ton*	11.00	@22.50

Chemical Market—*Continued*

New York Quotations

April 25, 1925

Whiting			
Perfection	*ton*	$13.00	@$14.00
Quaker	*ton*	13.00	@15.00
Snowflake white	*ton*		@
Superfine	*ton*		@
Sussex	*ton*	8.00	@10.00
Witco (C. L.)	*ton*	12.00	@
York	*ton*	8.00	@
Wood pulp, XXX (facty.)	*ton*	35.00	@
X (facty.)	*ton*	25.00	@
Mineral Rubber			
Genasco (facty.)	*ton*	50.00	@52.00
Gilsonite	*ton*		@
Granulated M. R.	*ton*	35.00	@45.00
Hydrocarbon, hard	*ton*	29.00	@35.00
Hydrocarbon, soft	*ton*	29.00	@35.00
Mineral Flour	*ton*	17.00	@
Ohmlac Kapak, K-R	*ton*	30.00	@60.00
K-4	*ton*	175.00	@
320/340 m. p. hydrocarbon	*ton*	47.00	@52.00
300/310 m. p. hydrocarbon	*ton*	42.00	@47.00
Pioneer, M. R., solid (fac.)	*ton*	42.00	@44.00
M. R. granular	*ton*	52.00	@54.00
Robertson, M. R., solid, (facty.)	*ton*	35.00	@75.00
M. R. (gran. facty.)	*ton*	42.00	@80.00
Paradura	*ton*	60.00	@62.50
Rubrax (facty.)	*ton*	60.00	@
Synpro, gran. M. R. (facty.)	*ton*		@
Resins and Pitches			
Tar, pine, retort	*bbl.*	13.00	@14.50
kiln	*bbl.*	13.00	@15.50
Pitch, Burgundy	*lb.*	.06½	@
coal tar	*ton*	23.00	@
Fluxol hardwood	*lb.*	.03	@ .04
pine tar	*bbl.*	6.00	@
ponto	100 *lbs.*	6.00	@
Rosin, K (bbl.)	280 *lbs.*	9.30	@
strained (bbl.)	280 *lbs.*	9.15	@
Shellac, fine orange	*lb.*	.62	@ .66
substitute	*gal.*	1.50	@
Peanut, crude	*lb.*	.13	@
refined	*lb.*	.15	@
Petrolatum, standard	*lb.*	.06	@ .08
Petrolatum, sticky	*lb.*	.08	@ .10
Pine, steam distilled	*gal.*	.65	@ .68
Rapeseed, refined	*gal.*	1.00	@
blown	*gal.*	1.18	@
Rosin	*gal.*	.49	@ .50
Soya bean	*lb.*	.13¼	@ .13½
Tar	*gal.*	.28	@ .30
Woburn	*lb.*	.05	@
Oils (Softeners)			
Avoilas compound	*lb.*	.12	@ .13
Castor, No. 1, U. S. P.	*lb.*	.17	@
No. 3, U. S. P.	*lb.*	.16¾	@
Corn, crude (bbls.)	*lb.*	.13	@
Cotton, Summer yellow	*lb.*	.13	@

Oils (Softeners)—*Continued*			
Cycline	*gal.*	$0.35	@$0.38
Glycerine	*lb.*	.19	@ .19¼
Linseed, raw	*gal.*	1.10	@
Liquid rubber	*lb.*	.11	@
Palm lagos	*lb.*	.11	@
clarified	*lb.*	.09½	@ .10
Palm, niger	*lb.*	.10½	@
Parra M. R. flux	*lb.*	.06	@ .07
Solvents			
Acetone (98.99%, [6.62 lbs. gal.])	*lb.*	.11	@ .12
Benzol (90%, 7.21 lbs. gal.) pure	*gal.*	.24	@ .29
Carbon bisulphide (10.81 lbs. gal.) 99.9% pure (drums)	*lb.*	.06½	@ .07½
tetrachloride (13.28 lbs. gal.) 99.7% pure (drums)	*lb.*	.07	@ .08
Gasoline			
No. 303			
Tankcars	*gal.*	.21½	@
Drums, C. L.	*gal.*	.24½	@
Drums, L. C. L.	*gal.*	.27½	@
Motor gas (steel bbls)	*gal.*	.20	@
Naphtha, V. M. & P.	*gal.*	.20½	@
68° Bé., 122°, 324°	*gal.*	.18	@
70° Bé., 114°, 314°	*gal.*	.19	@
71° Bé., 112°, 304°	*gal.*	.19½	@
Turpentine, spirits	*gal.*	.97	@
wood, steam distilled	*gal.*	.85	@
Substitutes			
Black	*lb.*	.08	@
Brown	*lb.*	.10	@ .15
White	*lb.*	.09	@ .16
Brown factice	*lb.*	.08	@ .14
White factice	*lb.*	.09½	@ .16
Vulcanizing Ingredients			
Black hypo	*lb.*	.18	@
13% F. S.	*lb.*	.20	@
Ethyl chloride (drums)	*lb.*	.24	@
Sulphur chloride (drums)	*lb.*	.04½	@ .05
Sulphur, Bergenport brand, 100% pure (C.L.)	100 *lbs.*	2.35	@ 2.60
(L.C.L.)	100 *lbs.*	2.90	@ 3.15
Sulphur, Brooklyn brands			
Refined velvet (bbls.)	100 *lbs.*	2.90	@ 3.15
(bags)	100 *lbs.*	2.65	@ 2.90
Superfine flour (bbls.)	100 *lbs.*	2.60	@ 2.90
(bags)	100 *lbs.*	2.20	@ 2.50
Rubber makers	100 *lbs.*	3.25	@ 3.50

(See also Colors—Antimony)

Waxes			
Wax, beeswax, white, com.	*lb.*	.55	@ .65
ceresine, white	*lb.*	.10	@ .11
carnauba	*lb.*	.38	@ .40
montan	*lb.*	.06	@ .06½
ozokerite, black	*lb.*	.24	@ .25
green	*lb.*	.26	@ .30
Paraffin			
122/124 white crude scale	*lb.*	.05½	@
124/126 white crude scale	*lb.*	.05¾	@
120/122 fully refined	*lb.*	.05½	@
125/127 fully refined	*lb.*	.05¾	@

LOS ANGELES MEETING OF A. C. S.

The American Chemical Society will hold its seventieth meeting at Los Angeles from August 3 to 8, 1925. A special train has been provided, which will stop en route at such points as Colorado Springs, Albuquerque, Santa Fé, the Grand Canyon National Park, etc.

SWEDEN'S PRODUCTION OF RUBBER GOODS

According to *Commerce Reports*, Sweden's production of rubber goods during recent years has been valued as follows: (1913), 10,714,000 crowns; (1920), 43,911,000 crowns; (1922), 24,658,000 crowns; and (1923), 26,038,000 crowns. The crown equals approximately $0.27. The 1924 figures are not yet available.

SPRING MEETING, A. S. M. E. TO BE HELD IN MILWAUKEE

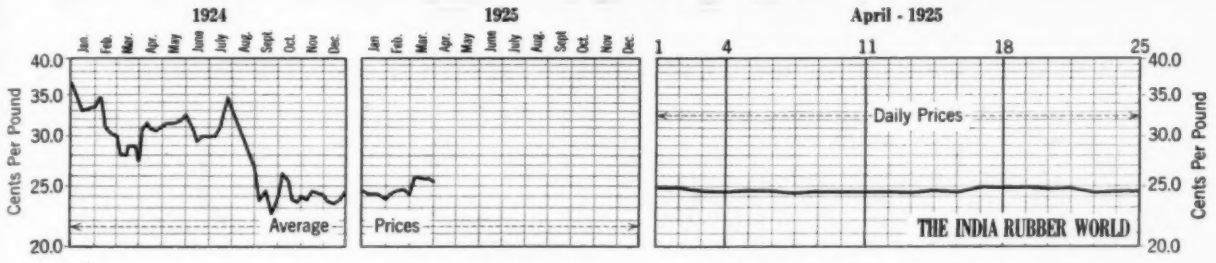
Special arrangements and an interesting program are being prepared for the Spring Meeting of the American Society of Mechanical Engineers, which will be held May 18-21, 1925, at Milwaukee, Wisconsin. The society's headquarters in that city will be at the Hotel Pfister, and all technical sessions will be held there. Those wishing to attend the meeting and desiring hotel accommodations should communicate with Edward H. Bair, Chairman Hotel Committee, 120 Wisconsin street, Milwaukee, Wisconsin.

TWELFTH NATIONAL FOREIGN TRADE CONVENTION

The twelfth National Foreign Trade Convention will be held at Seattle, Washington, June 24, 25, and 26, and preliminary programs as issued by the National Foreign Trade Council indicate that the occasion will represent the Council's first comprehensively international convention. Delegations of business men are expected from Japan, China, India, Straits Settlements, the Dutch East Indies, the Philippines, and Mexico, and at the coming sessions the various phases of foreign trade will be thoroughly discussed.

GOVERNMENT WILL APPEAL IN DYE PATENT DECISION

Following the dismissal on March 27 by the Federal Circuit Court of Appeals of the government suit to compel the Chemical Foundation, Inc., to return 6,000 German dye and chemical patents, an appeal is to be taken by the government to the Supreme Court. The decision of the Court of Appeals affirms similar action in the lower court by Federal Judge Morris of Delaware. The findings virtually exonerate Francis P. Garvan, who was Alien Property Custodian when the sale of the patents was made to the Foundation.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. Spot middlings for the month of April averaged 1⅛ cents below the average for March. The month began with spot at 24.90, declining to 24.30 on the 15th, followed by a reaction to 24.95, which held for a few days and again declined to 24.45 on the 25th. Cotton is now steadier below the 25 cent level. There is no improvement in spot demand and no pressure to sell has been evident.

A cheerful view of crop possibilities prevails. The outlook is favorable for normal new crop output in most sections and a small increase of acreage. The government report on acreage is due July 1.

ARIZONA COTTON. Pima cotton is very scarce and there is practically none left outside of spinners' hands. New crops are progressing favorably on a greatly increased acreage.

EGYPTIAN COTTON. Egyptians, both Sakel and Uppers, after a considerable reaction, have again turned upward and the Alexandria market is showing real strength brought about by the fast dwindling of supplies. The total reactions from the extreme high prices were approximately 17 cents in Sakel and 5 cents in Uppers. All advices regarding the new crop are favorable and an increase in acreage is indicated.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The market at the present time is rather quiet as far as new far forward engagements are concerned. Dealers are active, however, on business already booked and the miscellaneous daily business is becoming more encouraging than it has been since February. Prices are close and entirely in favor of the buyer and against the producer of cotton goods. They are apt to remain so while the tremendous exports of cotton tend to keep the staple firm or advancing at the same time that a sub-normal call for fabrics withdraws from the strength of price of the latter.

ENAMELING DUCKS. The price for these goods seems to be at the bottom level. They can scarcely go much lower and any demand will tend toward a rising market.

RAINCOAT FABRICS. The raincoat trade is inactive. No change is expected in this market until late in May when the manufacturers will begin to place fall orders.

SHEETINGS. The market holds rather firm in spite of little or no buying. Buyers are placing orders only for goods absolutely needed. There are many inquiries which fail to result in business and indicate a general waiting policy toward developments.

TIRE FABRICS. The market continues quiet and prices are below fair value on present cotton levels. In fact, the market is very badly cut up and there is no way of determining just what the market price is on any fabric. Each deal is at a separate figure depending on the ascertainment of a common ground on which the buyer and seller can mutually agree.

Egyptians are almost at a standstill on account of the high price. Square woven tire fabric is slowly becoming obsolete, especially in view of the fact that the Ford Motor Co. has decided to use cord tires. This change and also the practice of adding to the plies of cord in balloon tires is certain to stimulate greatly the demand for cord fabric, and this may advance the relative prices of these goods.

New York Quotations

April 25, 1925

Drills

38-inch 2.00-yard	yard	$0.21½ @
40-inch 3.47-yard		.12½ @
52-inch 1.90-yard		.23½ @
60-inch 1.52-yard		.29¾ @

Duck

38-inch 2.00-yard	yard	.23 @
40-inch 1.47-yard		.31½ @
72-inch 16.66-ounce		.53½ @
72-inch 17.21-ounce		.54½ @
MECHANICAL		
Hose and belting	pound	.45 @
Specials		.49 @
TENNIS		
52-inch 1.35 yard	yard	.35 @

Hollands

DEAD FINISH		
Standard, 37-inch	yard	.19½ @
42-inch		.23½ @
FLAT FINISH		
Imperial, 36-inch		.15½ @
40-inch		.17½ @
RED SEAL		
36-inch		.18 @
40-inch		.19 @
50-inch		.30 @

Osnaburgs

40-inch 2.35-yard	yard	.19½ @
40-inch 2.48-yard		.18½ @
40-inch 3.00-yard		.15½ @
37-inch 2.42-yard		.19½ @

Raincoat Fabrics

COTTON		
Bombazine 64 x 60	yard	.13½ @
Bombazine 60 x 48		.12½ @
Plaids 60 x 48		.13 @
Plaids 56 x 44		.12½ @
Surface prints 60 x 48		.13½ @
Surface prints 64x60		.14½ @

Sheetings, 40-inch

40 x 48, 2.50-yard	yard	.16½ @
48 x 48, 2.85-yard		.14¼ @
64 x 68, 3.15-yard		.14½ @
56 x 60, 3.60-yard		.12 @
48 x 44, 3.75-yard		.10¾ @

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	$0.08¼ @
40 x 40, 6.15-yard		.07½ @

Tire Fabrics

SQUARE WOVEN 17¼-ounce			
Egyptian, karded	pound	.68 @	.73
Peeler, karded		.50 @	.51
CORD 23/5/3			
Egyptian, combed	pound	.77 @	.82
Egyptian, karded		.70 @	.75
Peeler, combed, 1 1/16-in.		.73 @	.75
Peeler, karded, 1 1/16-in.		.51 @	.53
CORD 13/3/3			
Peeler, karded	pound	.49 @	.50
LENO BREAKER			
8-oz. Peeler, karded	pound	.50 @	.52
10-oz. Peeler, karded		.50 @	.52
CHAFER			
8.25-oz. Peeler, karded	pound	.61 @	
12-oz. Peeler, karded		.59 @	
9.5-oz. Peeler, karded		.51 @	.52
14-oz. Peeler, karded		.51 @	.52

The Cotton Outlook

South Must Grow More Cotton or Others Will

It now seems reasonably certain that if the coming crop of American cotton should fall materially short of the 1924-25 crop, the world would again be faced with a comparative shortage of American cotton, for last season's crop promises to add only some 500,000 bales to the lowest carryover on record. Present indications are that boll weevil infestation this year will break all records unless heroic measures are taken to combat these pests. Either an intensive anti-weevil campaign or an increase in acreage offers the only means of increasing the total crop, and the prospect of either now appears to be somewhat doubtful. Unfortunately planters seem to be only apathetically interested in boll weevil extermination, and indications to date are that planted acreage will be about the same as last year, in accordance with the recommendation of the Department of Agriculture. In certain sections some curtailment has been made in the belief that it will tend to increase prices. One outcome of all this is certain. The South must grow more cotton or other countries will.

Restriction Short-Sighted

At the annual convention of the American Cotton Manufacturers' Association, held in New Orleans, Louisiana, early in April, Stuart W. Cramer, joint president of the National Council of American Cotton Manufacturers, emphasized the short-sightedness of the policy of restriction in part as follows:

Some short-sighted people preach restricting production to the point of an actual shortage of supply, believing that the increased demand will bring higher prices; and so it will, but it will also automatically curtail consumption until prices drop again; and worse yet, it will give an added impulse to the growing of cotton elsewhere. Many Americans believe that the South will always have what they are pleased to call a monopoly of cotton. I believe that to be a mistake. Other countries can and will grow cotton when there is sufficient inducement for them to do so. Last year Russia consumed over a half-million bales of cotton, buying only 212,000 bales of American cotton! They raised it all, and plan to raise more this year. They are importing more cotton this year, but clearly show a disposition to raise their own cotton.

Other cotton-producing countries are increasing their acreage. The Soudan will raise cotton sooner or later. There are millions of acres in Africa suitable for growing cotton and millions of blacks capable of raising it if properly directed.

Is it not a better policy to raise more cotton at a lower price per pound and reap as great a profit per crop than to raise less cotton at a higher price and no more profit, if as much, per crop? A 15,000,000-bale crop at, say, 25 cents, is not too much and could surely be sold and would bring as much as a 12,500,000-bale crop at 30 cents.

And quality must also be considered. Some academicians in the Department of Agriculture a few years ago conducted and published a series of tests purporting to show so-called "spinning values of low-grade cottons," as though manufacturers were stupid enough not to use the cheapest and lowest-grade cotton that would answer in their work. Yes, certainly, low grades can be and are being worked for many purposes commercially, but laboratory performance and commercial production are two different things.

Foundation Laid for Weevil Control

At the same convention, Colonel Harvie Jordan, secretary of the American Cotton Association, and chairman of its weevil control commission, declared that the foundation has been laid for the ultimate control of the cotton boll weevil, insuring that the South will continue as the great cotton producing section of the world. In the educational work of the control commission $250,000 has been spent in the past two years. The southern manufacturers have been cooperating in the work and will continue earnestly to support it.

Large Increase in American Cotton Goods Production

Establishments engaged primarily in the manufacture of cotton goods reported to the number of 1,375 to the Bureau of the Census for the year 1923, the total output of these companies being valued at $1,901,125,703, an increase of 48.7 per cent as compared with 1921, the last preceding census year. The following totals included in the reports are of interest to the rubber industry:

	1923	1921	Per cent of increase
Cord fabrics for tires—			
Pounds	60,269,377		
Square yards	100,727,166		
Value	$39,631,780		
Tire fabrics other than duck and cord—		40,190,848	148.4
Pounds	39,558,849	43,933,691	260.3
Square yards	57,569,014	$43,913,959	45.2
Value	$24,123,826		
Drills—			
Pounds	105,309,534	70,999,478	48.3
Square yards	303,420,862	191,715,280	57.7
Value	$46,761,510	$22,031,291	111.6
Osnaburgs—			
Pounds	49,988,195	45,197,728	10.6
Square yards	109,101,142	100,039,127	9.1
Value	$19,539,170	$11,767,447	66.0
Sheetings—			
Pounds	409,492,151	381,352,105	7.4
Square yards	1,695,520,069	1,600,998,979	5.9
Value	$208,338,025	$158,216,314	31.7
Tire duck—			
Pounds	63,858,718	56,056,431	14.3
Square yards	68,258,927	51,722,845	32.0
Value	$42,324,027	$57,738,475	—26.6

The Spread of Cotton Culture and Manufacture

Addressing the annual convention of the Texas Cotton Association at Austin, Texas, early in April, J. Howard Ardrey, vice-president of the National Bank of Commerce in New York, alluded to the steady spread of cotton culture in the wake of cotton manufacture throughout the world. Said he:

Slowly but surely the cotton textile industry is being established throughout the world. Cotton now goes in every direction. Also, in the future will it come from every direction, for equally as important as the spread of manufacturing industries throughout the world is the tendency toward diffusion of sources of supplies of many raw materials.

The changing position of the United States is made clearly evident by its comparative position as an exporter. Five countries, the United States, British India, Egypt, Peru and Brazil, exported an average of 12,415,000 bales of cotton during the five years ending with June, 1910, to 1914, and exports from the United States were 69 per cent of the total. Exports from the same five countries averaged 9,951,000 bales during the three-year period ending with June 30, 1924, and the share of the United States amounted to only 56 per cent of the whole. However, the South still occupies the strategic world position for quantity production of cotton and can maintain it by establishing cotton culture on the practical, intensive, scientific basis made necessary by new conditions.

Cotton Acreage Increases Abroad

It is forecast that there will be a material increase in the planted area of cotton in the Anglo-Egyptian-Soudan districts in 1926 as the result of irrigation projects that have just been completed in the Gezira district, which opens the Kasalla region.

Russia reports intention to plant a considerably larger acreage of cotton, as compared with last year, according to the International Institute of Agriculture at Rome, Italy. The probable area will be 1,515,000 acres, or an increase of 27 per cent over the 1,196,000 acres reported for 1924, which yielded a crop of 458,000 bales.

The cotton area of Argentina amounts to 259,000 acres, an increase of 67 per cent over the 155,000 acres grown in 1923-24, and which yielded a crop of 69,000 bales. Yields in the past four years have varied between 200 and 230 pounds of lint to the acre.

Production in Paraguay, according to the International Institute, is expected to amount to 13,000 bales, as compared with 16,260 bales last year, when the area was estimated at 42,000 acres.

Unofficial reports from Southern Rhodesia indicate a cotton area of 70,000 acres, as compared with 4,000 acres last year. It is also stated that 20,000 acres were planted in Northern Rhodesia this year.

World Cotton Crop 24,540,000 Bales

The revised estimate of the world's cotton crop by the Department of Agriculture indicates a total of 24,540,000 bales for the 1924-25 season, as compared with 19,520,000 bales for the preceding crop year. The estimated cotton area for the season is 79,500,000 acres, as compared with 71,200,000 acres for the preceding year.

Metal Market Review

New York

During April inactivity continued to characterize the various metal markets, with a tendency toward lower prices. Steel ingot production in March was better than anticipated, although April has been representing quieter conditions.

ALUMINUM. This market continues to be of a routine character, while the low prices for copper are said to exert a restraining influence on aluminum because of the competition of the two metals in electrical use. The new aluminum produced during 1924 in the United States is reported by the Geological Survey to have had a value of $37,607,000, with an average price through the year of about 28 cents a pound. The annual world production of this metal is now 220,000 tons, the United States supplying about one half, or 112,000 tons, while Norway, taking the second place, produces one tenth.

ANTIMONY. The spot market for this metal remained weak during most of April, although prices during the last of the month became firmer.

COPPER. The copper market continues disappointing, the general impression being that production is too heavy for the present state of consumption. Demand for export is now relatively better than that for domestic use, and shipments have been going forward steadily, with France and Germany as the chief destination points.

LEAD. After three or four mark-downs in prices recently, the trade is now hoping that the decline has spent its strength. Although consumption of this metal is at present not as heavy as in December and January, it is still satisfactorily large.

STEEL. Production as well as new orders for finished steel showed a falling-off during April, and conditions have thus been summed up by the *Iron Trade Review:* "After a burst of extraordinary production extending over three months, the steel market has apparently settled down to a secondary stage of comparative quiet and uneventful trading. Buyers also feel under no pressure to order material except as they absolutely need it, because supplies are so liberal." According to the American Iron and Steel Institute, steel ingot production in March gained 3 per cent over February and represented the second largest output in the history of the industry, while the February rate was less than 1 per cent greater than in January. The production for the entire industry in March is estimated at 3,977,000 tons.

TIN. During the past few weeks this metal has shown great fluctuations in price. During the latter part of April the figures rose sharply in both New York and London. The world's visible supply of tin on April 1 totaled 19,623 tons, as compared with 23,275 tons a year ago.

ZINC. There has been small demand for this metal, and prices during the last of April were at the lowest level of the year. Stocks of zinc on March 31, 1925, amounted to 17,196 tons, as compared with 32,074 tons for the year previous.

Basic Metals

April 25, 1925

	Cents per pound	
Aluminum, virgin, 98@99 per cent	27.00	@28.00
Antimony	11.25	@11.50
Copper—Lake, spot	13.50	@13.625
Electrolytic, spot	13.375	@13.50
Castings, refinery	13.00	@
Lead, spot, New York	7.75	@
Lead, spot, East St. Louis	7.40	@ 7.45
Nickel, ingot, pound	31.00	@32.00
Tin, spot	53.50	@
Zinc, spot, New York	7.30	@ 7.35
Zinc, spot, East St. Louis	6.95	@ 7.00

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COURSE

	Cents per pound	
Bright basic	4.25	@ 4.50
Annealed soft	4.50	@ 4.75
Galvanized annealed	5.15	@ 5.40
Coppered basic	5.15	@ 5.40
Tinned soft Bessemer	6.15	@ 6.40

* Regular extras for lighter gage.

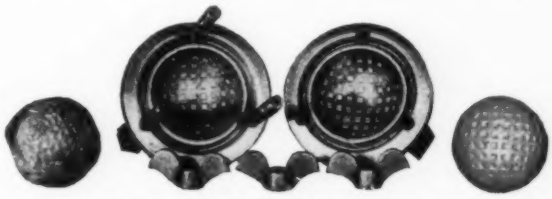
Copper Wire

Base price F. O. B. factory.

	Cents per pound	
Bare copper wire	16.00	@
No. 6 B. & S. gage	16.00	@
No. 8 B. & S. gage	16.00	@
No. 14 B. & S. gage	17.00	@

REPAIRING GOLF BALLS

Perfect golf balls are a prime necessity to the golfer, and the replacement of old ones with new is a most important item in the cost of golfing. This expense can be greatly reduced by the use of the remolding outfit here pictured. It consists simply of a



Universal Outfit for Golf Ball Repair

two-part mold fitted in close registration by three long dowel pins threaded at the end to receive thumb nuts with which to draw the mold together.

With this simple hand mold one can repair any golf ball that has a good core regardless of the condition of its cover. New covers are supplied for application in place of the old, or the old can be remolded and repaired where sliced or missing. Balls may be restored to true shape and balance and impressed with a private mark if desired.—Golf Ball Die Co., Detroit, Michigan.

AMERICAN EXPORTS OF RUBBER GOODS INCREASE

Exports of American rubber goods have shown in general an increase during the last half of 1924, as compared with the first six months of that year. This is evident, for example, in shipments of such classes of goods as rubber boots and shoes; rubber thread; soles and heels; rubber water bottles and fountain syringes; rubber toys, balls, and balloons; tire repair materials; etc. In all these cases the figures indicate evident improvement in the foreign markets, and an encouraging trend for the 1925 industry.

AMERICAN EXPORTS IN 1924 OF RUBBER THREAD TOTALED 1,240,462 pounds, value $1,378,907. The corresponding value for 1922 was $1,193,301.

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Water proofed Auto Cloth and Rubberized Fabrics Value
EUROPE												
Austria	.....	.....	$16	.....	12	$18	.....	.....	2,184	$3,516	.....	$375
Azores and Madeira Is.	.....	.....	.....	.....	24	102	.....	.....	40	43	$66	.....
Belgium	$1,416	$3,296	1,069	$5,741	72	244	.....	.....	.....	.....	.....	1,474
Bulgaria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Czechoslovakia	.....	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denmark	.....	540	439	.....	1,863	4,469	1,289	$1,823	9,912	7,827	.....	180
Finland	601	.....	.....	.....	.....	.....	.....	.....	.....	.....	115	247
France	4,217	329	1,972	32,094	12	23	259	311	72	88	140	4,781
Germany	820	166	1,290	.....	444	1,406	1,335	978	1,570	1,519	.....	1,060
Gibraltar	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Greece	45	145	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hungary	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iceland and Faroe Is.	.....	.....	.....	.....	677	1,316	2,202	6,810	.....	.....	.....	.....
Italy	.....	230	124	15,750	511	1,787	777	352	2,460	2,066	.....	.....
Latvia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	.....
Malta, Gozo and Cyprus Is.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Netherlands	200	4,773	1,049	.....	2,406	7,218	.....	.....	432	352	177	1,614
Norway	1,503	245	94	.....	1,131	3,639	1,455	915	1,104	1,069	1,678	4,316
Poland and Dantzig	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portugal	.....	125	.....	.....	.....	.....	.....	.....	.....	.....	.....	72
Rumania	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spain	.....	90	.....	1,586	.....	.....	.....	.....	.....	.....	.....	.....
Sweden	9,856	1,373	429	2,813	1,472	4,674	106	298	.....	.....	440	235
Switzerland	.....	.....	101	.....	.....	.....	216	168	168	258	37	.....
Turkey in Europe	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
United Kingdom	11,438	25,241	3,639	44,150	19,701	44,531	3,232	2,749	54,859	42,988	2,438	9,516
Irish Free State	.....	.....	.....	.....	2	12	.....	.....	.....	.....	.....	.....
Yugoslavia, Albania, etc.	.....	.....	.....	.....	14	64	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	$30,096	$37,168	$10,222	$102,134	28,341	$69,503	9,871	$14,404	72,801	$59,726	$5,102	$23,970
NORTH AMERICA												
Canada	$13,489	$15,787	$5,104	$10,149	3,159	$7,991	2,556	$2,077	771	$826	$1,263	$24,395
British Honduras	45	.....	35	.....	.....	.....	.....	.....	141	210	44	.....
Costa Rica	.....	956	.....	.....	.....	.....	84	94	96	103	110	480
Guatemala	326	473	234	.....	.....	.....	.....	.....	4,033	3,012	860	159
Honduras	321	594	685	.....	.....	.....	312	188	519	540	906	.....
Nicaragua	250	139	80	.....	.....	.....	.....	.....	1,013	1,010	1,619	.....
Panama	302	2,258	806	.....	.....	.....	24	88	1,851	1,233	284	.....
Salvador	.....	401	.....	.....	.....	.....	736	377	648	411	4,565	.....
Mexico	13,107	20,450	2,666	177	95	389	1,499	374	49,157	41,820	7,986	1,534
Miquelon and St. Pierre Is.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Newfoundland and Labrador	228	837	185	.....	7,287	16,894	3,147	2,555	24	13	555	.....
Bermuda	.....	27	.....	.....	25	88	29	29	24	41	3	.....
Barbados	10	.....	.....	.....	.....	.....	.....	.....	191	157	42	.....
Jamaica	.....	115	134	.....	.....	.....	.....	.....	1,886	1,459	85	283
Trinidad and Tobago	.....	204	.....	.....	.....	.....	.....	.....	48	92	.....	307
Other Brit. West Indies	.....	48	.....	.....	.....	.....	.....	.....	409	287	41	.....
Cuba	5,246	5,800	3,921	.....	297	505	8,407	5,453	47,813	27,761	6,267	3,685
Dominican Republic	151	640	116	.....	.....	.....	.....	.....	8,254	5,630	455	288
Dutch West Indies	.....	.....	.....	.....	.....	.....	.....	.....	6,863	4,624	87	.....
French West Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	169
Haiti	.....	139	36	.....	.....	.....	73	70	432	432	808	77
Virgin Islands of U. S.	.....	.....	.....	.....	.....	.....	.....	.....	950	719	68	.....
TOTALS, NORTH AMERICA	$33,475	$48,868	$14,002	$10,326	10,863	$25,867	16,867	$11,305	125,133	$90,380	$26,048	$31,377
SOUTH AMERICA												
Argentina	$3,277	$2,368	$896	$178	1,416	$4,747	.....	.....	35,723	$19,615	$7,054	$12,518
Bolivia	1,124	142	.....	.....	.....	.....	.....	.....	432	300	57	.....
Brazil	2,334	2,222	423	.....	.....	.....	.....	.....	48	47	.....	1,491
Chile	23,327	5,976	954	.....	379	2,020	7,387	$8,086	1,036	998	625	4,552
Colombia	1,038	347	28	224	.....	.....	384	278	4,934	3,533	7,735	1,079
Ecuador	65	213	.....	.....	.....	.....	.....	.....	1,925	1,379	696	.....
British Guiana	6,076	.....	99	.....	.....	.....	.....	.....	146	130	75	161
Dutch Guiana	.....	450	.....	.....	.....	.....	.....	.....	864	477	31	.....
French Guiana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Paraguay	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peru	2,170	1,504	220	.....	.....	.....	.....	.....	403	416	26	368
Uruguay	125	179	.....	.....	.....	.....	.....	.....	8	13	976	791
Venezuela	1,638	1,841	878	.....	.....	.....	.....	.....	.....	.....	2,500	244
TOTALS, SOUTH AMERICA	$41,174	$15,242	$3,498	$402	1,795	$6,767	7,771	$8,364	45,519	$26,908	$19,775	$21,204
ASIA												
Aden	$24	$39	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	458	1,843	$291	.....	.....	.....	.....	.....	996	$819	.....	$750
Ceylon	1,255	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Straits Settlements	.....	.....	.....	.....	.....	.....	.....	.....	952	689	.....	782
China	530	622	323	.....	84	$211	6,508	$4,881	6,152	6,103	.....	2,001
Chosen	2,168	46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Java and Madura	147	890	1,072	.....	120	240	.....	.....	7,615	7,731	.....	1,665
Other Dutch East Indies	.....	.....	.....	.....	.....	.....	.....	.....	153	134	.....	144
French Indo-China	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	106
Hejaz, Arabia, etc.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Japan	5,752	3,134	1,748	$16,995	.....	.....	744	645	7,224	6,201	.....	182
Kwangtung, leased territory	.....	.....	.....	.....	.....	.....	168	140	.....	.....	.....	619
Palestine and Syria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Persia	.....	.....	1,150	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philippine Islands	7,564	2,017	973	.....	168	334	.....	.....	51,502	37,986	$7,072	2,381
Siam	.....	.....	.....	.....	.....	.....	.....	.....	2,109	1,323	.....	.....
TOTALS, ASIA	$17,921	$8,591	$5,557	$16,995	372	$785	7,420	$5,666	76,703	$60,986	$7,072	$8,630
OCEANIA												
Australia	$4,048	$3,022	$3,344	.....	468	$1,766	546	$265	300	$197	.....	$4,807
British Oceania	.....	.....	.....	.....	.....	.....	.....	.....	120	93	.....	.....
French Oceania	.....	.....	.....	.....	.....	.....	.....	.....	812	689	.....	.....
New Zealand	.....	287	566	.....	7,105	22,495	288	150	24	43	.....	.....
Other Oceania	.....	.....	.....	.....	.....	.....	.....	.....	192	244	.....	.....
TOTALS, OCEANIA	$4,048	$3,309	$3,910	.....	7,573	$24,261	834	$415	1,448	$1,266	.....	$4,807

United States by Countries During February, 1925

Water proofed Outer Garments Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Solid Tires: Automobile and Motor Truck Number	Solid Tires: Automobile and Motor Truck Value	Solid Tires: Others Value	Tire Rubber Accessories, Repair Materials Value	Hard Rubber Goods: Electrical Supplies Value	Hard Rubber Goods: Others Value	Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
.....	.....	.....	.....	.....	.....	.....	.....	.....	$78	.....	.....	.....	.....	.....	.....
$22	66	$878	.....	$48	.....	.....	.....	.....	51	.....	.....	.....	$1,024	$1,023	$2,286
.....	3,482	57,544	.....	12,590	.....	.....	.....	.....	38	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	1,092	21,055	$386	2,907	$220	169	$5,067	.....	.....	.....	.....	.....	1,275	4,451	.....
.....	1,569	14,610	60	842	.....	50	1,802	.....	1,691	.....	$35	.....	.....	.....	.....
.....	341	5,293	.....	240	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2,235	925	19,700	.....	1,385	.....	36	1,798	.....	1,909	$4,042	6,689	$531	1,226	9,524	139
192	281	9,322	.....	712	.....	.....	.....	.....	.....	.....	.....	450	1,020	7	7,777
.....	.....	.....	.....	.....	.....	.....	.....	.....	100	.....	.....	.....	.....	.....	.....
215	840	13,381	.....	1,340	.....	64	3,333	.....	760	.....	.....	.....	.....	.....	.....
.....	37	711	.....	386	.....	.....	.....	.....	14	.....	.....	.....	.....	.....	.....
.....	195	2,744	.....	103	.....	.....	.....	.....	.....	.....	.....	.....	914	.....	9
.....	182	2,882	.....	391	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	95	1,311	.....	92	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	54
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	65	1,288	10,815
.....	1,335	20,305	.....	1,346	.....	26	778	.....	656	.....	.....	.....	340	1,419	.....
.....	1,276	21,663	45	2,468	15	45	2,053	.....	532	125	.....	.....	.....	.....	.....
.....	830	9,769	.....	2,203	.....	.....	.....	.....	.....	153	.....	.....	104	.....	94
.....	303	4,416	121	3,720	44	2	35	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	258	.....	.....	.....	.....	562	.....	69	.....	461	1,067	.....
.....	1,449	18,541	.....	1,869	.....	221	4,057	.....	41	.....	.....	146	860	5,876	1,152
95	2,483	29,261	.....	5,683	.....	2	130	.....	.....	.....	130	.....	364	1,824	122
.....	287	5,738	.....	761	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	20	313	.....	98	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2,000	10,983	127,271	3,988	15,250	210	2,556	52,443	.....	5,766	13,381	19,608	838	11,651	4,656	41,470
.....	148	1,325	.....	58	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	83	978	.....	123	.....	2	62	.....	160	.....	.....	.....	.....	.....	.....
$4,689	28,302	$388,902	$4,600	$54,813	$489	3,173	$71,558	.....	$12,358	$17,701	$26,531	$1,965	$19,304	$31,075	$63,918
$1,857	2,705	$25,140	$205	$6,985	$345	217	$5,792	$585	$7,610	$8,304	$8,254	$349	$15,466	$4,389	$6,978
167	18	238	.....	29	.....	.....	.....	.....	.....	.....	.....	.....	18	.....	.....
36	45	1,501	60	132	15	.....	.....	.....	22	.....	11	.....	74	33	.....
347	144	2,407	.....	186	.....	.....	.....	.....	.....	.....	20	.....	11	15	70
47	28	353	18	219	10	39	2,390	.....	12	.....	.....	.....	46	.....	80
.....	83	961	92	26	.....	2	62	.....	.....	.....	17	.....	23	32	139
60	746	11,948	.....	1,656	.....	82	2,026	172	795	.....	67	.....	360	.....	17
.....	273	4,828	62	572	.....	28	1,036	.....	137	.....	.....	82	227	46	81
12,854	4,035	52,180	983	7,412	734	131	3,139	2,840	809	61	5,275	328	3,022	50	1,571
118	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4,295	2	30	.....	.....	.....	.....	.....	105	.....	.....	197	.....	274	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	36	44	.....
.....	20	248	.....	15	.....	16	264	.....	26	.....	.....	.....	.....	.....	.....
247	365	2,883	.....	233	.....	77	2,471	257	146	.....	.....	.....	.....	.....	.....
.....	54	621	.....	42	.....	27	1,080	.....	42	.....	.....	.....	.....	.....	.....
43	174	946	.....	11	.....	.....	.....	125	40	.....	.....	15	.....	.....	.....
6,423	5,097	50,974	1,339	18,616	1,385	832	19,268	501	2,923	422	2,830	1,187	3,037	.....	1,503
287	1,133	12,397	152	1,087	38	217	6,210	53	15	.....	18	15	400	4	46
.....	195	2,045	10	422	.....	.....	.....	.....	95	.....	.....	.....	.....	.....	.....
.....	165	2,549	.....	352	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	34
.....	161	2,195	13	721	.....	.....	.....	.....	19	.....	.....	.....	.....	.....	.....
28	4	47	.....	57	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
135	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$26,945	15,447	$174,491	$2,934	$38,773	$2,527	1,668	$43,738	$4,638	$12,691	$8,787	$16,689	$1,976	$22,994	$4,613	$10,519
$2,123	15,454	$167,290	$385	$30,253	$100	282	$8,901	.....	$2,289	.....	$274	$3,398	$6,566	.....	$1,448
.....	75	837	.....	193	.....	.....	.....	.....	36	.....	.....	.....	42	.....	75
.....	5,259	51,434	.....	4,154	.....	47	1,197	.....	452	$81	1,267	.....	18	.....	428
255	1,548	24,444	.....	1,315	.....	.....	.....	$11	20	.....	.....	117	.....	.....	24
955	942	12,168	149	2,923	18	74	3,725	553	199	.....	.....	51	637	.....	491
.....	204	3,473	.....	1,435	.....	.....	.....	.....	29	79	.....	2	57	.....	40
.....	11	112	.....	99	.....	.....	.....	52	.....	.....	.....	.....	.....	.....	.....
.....	34	349	.....	106	.....	.....	.....	.....	51	.....	536	.....	.....	.....	.....
.....	37	1,816	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25
28	1,372	21,944	.....	3,064	.....	31	1,102	.....	118	.....	27	.....	423	.....	305
1,256	7,375	37,066	.....	1,802	.....	24	916	.....	1,397	.....	.....	1,011	.....	.....	481
77	2,302	24,266	.....	5,118	48	.....	.....	.....	165	.....	.....	542	627	.....	111
$4,694	34,563	$345,199	$534	$50,462	$166	458	$15,841	$616	$4,756	$160	$2,104	$5,121	$8,370	.....	$3,428
.....	135	$1,130	.....	$160	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	1,685	17,479	$461	894	$27	135	$2,312	$1,616	$66	.....	$24	.....	$162	.....	$1,246
.....	204	2,393	.....	161	.....	30	1,023	681	.....	$30	.....	.....	.....	.....	.....
$312	4,907	40,772	288	3,174	74	228	5,445	.....	99	.....	.....	.....	.....	.....	.....
.....	156	2,227	557	108	.....	.....	.....	.....	.....	.....	20	$102	419	$321	292
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	2,644	20,968	482	255	215	186	4,568	1,535	35	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	440
.....	240	1,760	.....	280	.....	10	120	.....	20	.....	.....	112	389	206	.....
.....	2,196	17,382	1,298	1,103	219	237	3,658	.....	249	589	853	84	3,565	575	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	378	.....	.....	.....	.....	.....	.....
.....	436	6,226	.....	950	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	6	78	.....	13	.....	.....	.....	.....	.....	.....	41	401	1,111	327	310
8,104	4,098	42,192	381	2,989	170	455	13,258	7,611	1,404	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$8,416	16,707	$152,607	$3,467	$10,087	$705	1,281	$30,384	$11,443	$2,251	$619	$938	$699	$5,646	$1,429	$2,288
.....	5,013	$81,605	.....	$3,710	.....	780	$21,598	$422	$2,995	$308	.....	$24	$2,331	.....	$3,675
.....	18	171	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$45	31	362	.....	105	$45	2	39	.....	.....	.....	.....	.....	.....	.....	.....
.....	2,166	38,177	.....	5,413	.....	440	15,769	.....	2,245	.....	.....	246	977	.....	73
30	23	328	$15	34	.....	2	44	.....	.....	.....	.....	.....	.....	.....	14
$75	7,251	$120,643	$15	$9,276	$45	1,224	$37,450	$422	$5,240	$308	.....	$270	$3,308	.....	$3,762

Exports of India Rubber Manufactures from the

EXPORTED TO AFRICA	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Water proofed Auto Cloth and Rubberized Fabrics Value
Belgian Congo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British West Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British South Africa	$3,117	$13,732	$3,792	.....	197	$1,018	1,427	$1,753	2,303	$1,583	$1,448	.....
British East Africa	208	.....	.....	.....	.....	.....	.....	.....	72	45	.....	.....
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Egypt	134	187	.....	.....	.....	.....	.....	.....	.....	.....	.....	$413
Algeria and Tunis	265	991	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portuguese East Africa	2,899	.....	131	.....	.....	.....	.....	.....	50	24	.....	.....
TOTALS, AFRICA	$6,623	$14,910	$3,923	.....	197	$1,018	1,427	$1,753	2,425	$1,652	$1,448	$413
GRAND TOTALS	$133,337	$128,088	$41,112	$129,857	49,141	$128,201	44,190	$41,907	324,029	$240,918	$59,445	$90,401

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	February, 1925 Pounds	February, 1925 Value	Eight Months Ended February, 1925 Pounds	Eight Months Ended February, 1925 Value
UNMANUFACTURED—*free*				
Crude rubber	55,329,102	$18,552,115	500,948,059	$127,671,935
Balata	75,266	34,417	675,743	355,016
Jelutong or Pontianak	1,675,111	178,735	9,340,816	843,500
Gutta percha	205,105	37,546	1,699,258	267,104
Guayule	362,000	64,482	2,347,500	412,438
Rubber scrap	1,165,735	58,419	9,274,762	331,779
Totals	58,812,319	$18,905,714	524,286,138	$129,881,772
Chicle—*dutiable*	824,225	$415,890	5,782,357	$2,840,622
MANUFACTURED—*dutiable*				
Rubber belting	70,438	55,117	412,955	288,862
Other rubber manufactures of substitutes for rubber	.....	71,814	.....	783,587
Totals	70,438	$126,931	412,955	$1,072,449

Exports of Foreign Merchandise

UNMANUFACTURED				
Crude rubber	2,095,046	$728,959	15,647,550	$4,869,800
Balata	110,610	80,933	494,515	322,934
Jelutong or Pontianak	.....	.....	.....	.....
Gutta percha and rubber substitutes and scrap	184,519	101,467	195,083	105,145
Totals	2,390,175	$911,359	16,337,148	$5,297,879
Chicle	.....	.....	117,415	$43,507
MANUFACTURED				
Gutta percha and India rubber	4,052	1,665	94,553	40,111
Totals	4,052	1,665	94,553	40,111

Exports of Domestic Merchandise

MANUFACTURED				
India rubber				
Reclaimed	548,484	$54,270	3,712,960	$345,168
Scrap and old	1,957,688	75,967	16,413,177	671,111
Footwear				
Boots—*pairs*	49,141	128,201	677,829	1,536,525
Shoes—*pairs*	44,190	41,907	1,374,242	1,120,251
Canvas shoes with rubber soles—*pairs*	324,029	240,918	2,773,921	1,999,440
Rubber water bottles and fountain syringes, *number*	16,581	10,608	220,177	157,624
Other druggists' rubber sundries	47,557	60,037	484,960	582,307
Bathing caps—*dozen*	24,746	37,976	65,030	121,344

	February, 1925 Pounds	February, 1925 Value	Eight Months Ended February, 1925 Pounds	Eight Months Ended February, 1925 Value
Hard rubber goods				
Electrical hard rubber goods	60,026	27,575	311,850	150,118
Other hard rubber goods	26,351	46,262	362,199	457,829
Tires				
Pneumatic casings				
For automobiles.*number*	105,209	1,218,811	858,085	10,239,407
Others .....*number*	3,005	12,265	32,502	115,720
Pneumatic tubes				
For automobiles.*number*	88,287	172,781	726,335	1,325,488
Others .....*number*	4,337	4,201	32,808	28,812
Solid tires				
For automobiles and motor trucks.*number*	7,992	203,806	62,994	1,609,885
Others .....*number*	73,922	18,101	607,971	154,041
Tire accessories	103,350	38,183	964,517	390,781
Belting	256,612	133,337	2,272,619	1,293,360
Hose	334,595	128,088	2,681,673	1,034,741
Packing	88,482	41,112	1,177,849	532,389
Soles and heels	187,014	59,445	1,737,297	566,397
Thread	108,095	129,857	846,358	995,782
Other rubber manufactures	486,244	189,898	2,930,328	1,713,713
Totals	.....	$3,073,606	.....	$271,142,233

Imports of Crude Rubber Into the United States by Customs Districts

	February, 1924 Pounds	February, 1924 Value	February, 1925 Pounds	February, 1925 Value
Buffalo	430	$126	.....	.....
Massachusetts	2,002,636	483,591	2,618,332	$876,343
St. Lawrence	.....	.....	906	267
New York	65,606,696	16,455,171	47,228,967	15,693,778
Philadelphia	.....	.....	1,169,454	588,750
Los Angeles	2,759,253	647,880	3,959,971	1,261,951
San Francisco	208,480	54,506	117,337	39,411
Oregon	11,200	2,890	145,600	42,487
Washington	.....	.....	88,535	29,128
Totals	70,588,695	$17,644,164	55,329,102	$18,532,115

DURING 1924 THE UNITED STATES EXPORTED 3,577,255 POUNDS of rubber belting, value $2,089,056; hose, 4,422,819 pounds, value $1,728,776; and packing, 1,885,360 pounds, value $838,389. These figures compare favorably with the values for 1922 of $1,268,235, $1,340,244, and $546,115 respectively.

United States Crude and Waste Rubber Imports for 1925 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Total 1925	Total 1924	Balata	Miscellaneous	Waste
January—*tons*	28,480	989	325	54	112	...	29,960	21,611	22	1,462	206
February	21,740	1,203	120	224	163	6	23,456	31,763	48	908	241
March	31,067	1,906	287	305	346	3	33,914	17,752	25	1,022	186
Totals, 3 months, 1925—*tons*	81,287	4,098	732	583	621	9	87,330	.....	95	3,392	633
Totals, 3 months, 1924	66,597	3,212	1,036	214	67	..	.....	71,126	156	1,146	332

Compiled from statistics supplied by the Rubber Association of America, Inc.

United States by Countries During February, 1925—*(Continued)*

Waterproofed Outer Garments Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Solid Tires: Automobile and Motor Truck Number	Solid Tires: Automobile and Motor Truck Value	Solid Tires: Others Value	Tire Rubber Accessories, Repair Materials Value	Hard Rubber Goods: Electrical Supplies Value	Hard Rubber Goods: Others Value	Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
.....	25	$619	.....	$116	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$180	139	2,215	.....	330	.....	.....	.....	.....	$50	.....	.....	.....	.....	.....	.....
86	1,545	16,345	$546	6,162	$94	70	$1,425	.....	654	.....	.....	$577	$382	$244	$3,676
.....	469	8,209	169	1,816	175	6	113	.....	.....	.....	.....	.....	.....	.....	.....
.....	198	3,033	.....	157	.....	66	2,728	.....	.....	.....	.....	.....	.....	.....	.....
.....	473	5,109	.....	517	.....	46	569	$982	127	.....	.....	.....	33	615	112
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	90	1,439	.....	272	.....	.....	.....	.....	56	.....	.....	.....	.....	.....	.....
$266	2,939	$36,969	$715	$9,370	$269	188	$4,835	$982	$887	.....	.....	$577	$415	$859	$3,788
$45,085	105,209	$1,218,811	$12,265	$172,781	$4,201	7,992	$203,806	$18,101	$38,183	$27,575	$46,262	$10,608	$60,037	$37,976	$87,703

United Kingdom Rubber Statistics

Imports

	February, 1925 Pounds	February, 1925 Value	Two Months Ended February, 1925 January-February, 1925 Pounds	Two Months Ended February, 1925 January-February, 1925 Value
UNMANUFACTURED				
Crude rubber				
From—				
Straits Settlements	3,414,100	£233,566	8,281,900	£567,511
Federated Malay States...	1,781,000	119,115	3,808,800	260,346
British India	1,380,500	90,925	2,551,100	168,427
Ceylon and Dependencies..	1,678,800	115,881	3,921,500	260,808
Other Dutch Possessions in Indian Seas	370,900	26,531	1,432,600	101,786
Dutch East Indies (except other Dutch possessions in Indian Seas).....	1,607,600	109,741	3,286,400	217,205
Other countries in East Indies and Pacific, not elsewhere specified	284,700	23,160	365,600	29,090
Brazil	925,600	70,736	2,020,100	139,334
Peru	.....	.....	.....	.....
South and Central America (except Brazil and Peru)	.....	.....	.....	.....
West Africa:				
French West Africa....	332,100	18,345	482,800	25,906
Gold Coast	5,200	365	15,700	952
Other parts of West Africa	86,200	5,335	251,400	13,808
East Africa, including Madagascar	58,500	3,980	177,400	12,452
Other countries	37,400	1,872	126,500	8,524
Totals	11,962,600	£819,552	26,721,800	£1,806,149
Waste and reclaimed rubber.	405,300	4,622	864,800	9,963
Gutta percha and balata....	1,164,400	158,786	2,237,200	304,460
Rubber substitutes	22,400	800	23,500	831
Totals	13,554,700	£983,760	29,847,300	£2,121,403
MANUFACTURED				
Boots and shoes....*doz. pairs*	25,213	£63,548	48,390	£135,332
Tires and tubes				
Pneumatic				
Outer covers	.....	194,217	.....	393,249
Inner tubes	.....	23,042	.....	57,014
Solid tires	.....	26,874	.....	57,625
Other rubber manufactures..	.....	139,985	.....	261,955
Totals	.....	£447,666	.....	£905,175

Exports

UNMANUFACTURED				
Waste and reclaimed.....	1,099,600	£11,867	2,389,200	£25,604
Rubber substitutes	83,500	2,141	218,900	5,647
Totals	1,183,100	£14,008	2,608,100	£31,251
MANUFACTURED				
Boots and shoes....*doz. pairs*	21,628	£33,001	4,611	£68,650
Tires and tubes				
Pneumatic				
Outer covers	.....	215,803	.....	400,424
Inner tubes	.....	39,442	.....	83,483
Solid tires	.....	27,928	.....	61,858
Other rubber manufactures..	.....	230,473	.....	482,493
Totals	.....	£546,647	.....	£1,096,908

Exports—Colonial and Foreign

	February, 1925 Pounds	February, 1925 Value	Two Months Ended February, 1925 January-February, 1925 Pounds	Two Months Ended February, 1925 January-February, 1925 Value
UNMANUFACTURED				
Crude rubber				
To				
Russia	2,239,800	£169,213	2,985,500	£223,555
Sweden, Norway and Denmark	206,800	15,373	439,500	33,123
Germany	2,144,800	154,540	3,867,700	278,656
Belgium	347,500	27,208	884,400	68,632
France	3,551,400	263,690	6,808,200	518,713
Spain	61,100	4,699	112,000	8,742
Italy	1,611,700	119,085	3,219,400	242,794
Austria	4,500	359	11,800	990
Hungary	200	25	7,400	564
Other European countries.	207,600	14,742	564,600	37,958
United States	6,024,000	436,491	12,207,000	895,279
Canada	885,000	64,201	1,550,200	109,018
Other countries	261,100	19,973	282,300	21,730
Totals	17,545,500	£1,290,099	32,940,000	£2,439,754
Waste and reclaimed rubber.	7,500	206	11,100	293
Gutta percha and balata....	164,900	12,207	278,600	19,350
Rubber substitutes	.....	.....	.....	.....
Totals	17,717,900	£1,302,512	33,229,700	£2,459,397
MANUFACTURED				
Boots and shoes....*doz. pairs*	116	£595	509	£1,860
Tires and tubes				
Pneumatic				
Outer covers	.....	20,150	.....	55,231
Inner tubes	.....	2,797	.....	7,261
Solid tires	.....	810	.....	2,933
Other rubber manufactures..	.....	30,754	.....	41,229
Totals	.....	£55,106	.....	£108,514

Landings, Deliveries and Stocks in London and Liverpool as Returned by the Warehouses and Wharves During February, 1925

	Landed for Feb. Tons	Delivered for Feb. Tons	Stocks, February 28: 1925 Tons	1924 Tons	1923 Tons
LONDON:					
Plantation	4,658	8,415	23,248	56,391	*70,234
Other grades	...	...	84	98	117
LIVERPOOL:					
Plantation	†206	†673	†2,112	†5,221	†7,323
Pará and Peruvian.....	159	185	146	659	307
Other grades	...	13	46	210	272
Total tons, London and Liverpool	5,023	9,286	25,636	62,579	78,253

*Adjusted owing to stock taking at various wharves.
†Official returns from the six recognized public warehouses.

Crude Rubber Arrivals at New York as Reported by Importers

Parás and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Cameta Cases
MARCH 23. By "Bruyere," South America.					
H. A. Astlett & Co.	157,920 lbs.		33,600 lbs.		33,600 lbs.
General Rubber Co.	443	7	3	164	....
L. Littlejohn & Co., Inc.	289	....	246	96	....
Meyer & Brown Co.	219	....	....	247	....
Poel & Kelly, Inc.	93	....	171	217	....
MARCH 31. By "Alban," South America.					
Paul Bertuch & Co.	151	7	4	127	....
Paul Bertuch & Co.	62	....	....	....	....
General Rubber Co.	....	....	51	539	12
L. Littlejohn & Co., Inc.	1,359	60	227	253	....
Meyer & Brown, Inc.	....	....	....	166	....
Poel & Kelly, Inc.	93	....	48	309	....
Ultramares Corporation	9	....	3	13	....
APRIL 1. By "Alban," South America.					
H. A. Astlett & Co.	44,800 lbs.				
APRIL 9. By "Keifuku Maru," Hamburg.					
Meyer & Brown, Inc.	....	....	....	52	....
APRIL 10. By "Lassell," South America.					
L. Littlejohn & Co., Inc.	233	16	8	164	....
Meyer & Brown, Inc.	145	...	395	302	....
Ultramares Corporation	....	....	....	95	....
APRIL 17. By "Francis," South America.					
Meyer & Brown, Inc.	1,056 pkgs.				

Plantations

MARCH 17. By "American Trader," Far East.

	Cases
L. Littlejohn & Co., Inc.	298

MARCH 17. By "Lancastria," Europe.

	Cases
J. T. Johnstone & Co., Inc.	329
Poel & Kelly	369

MARCH 17. By "Steel Inventor," Singapore.

	Cases
Chas. T. Wilson & Co. Inc.	1,087

MARCH 18. By "American Trader," London.

	Cases
Chas. T. Wilson & Co., Inc.	312

MARCH 18. By "Ixion," Singapore.

	Cases
H. A. Astlett & Co.	351,680 lbs.
Paul Bertuch & Co.	200
General Rubber Co.	1,364
Hood Rubber Co.	*547 pkgs.
J. T. Johnstone & Co., Inc.	274
L. Littlejohn & Co., Inc.	3,185
Meyer & Brown, Inc.	1,654
Poel & Kelly, Inc.	3,908
Vernon Metal & Produce Co., Inc.	550
Chas. T. Wilson & Co., Inc.	438

MARCH 18. By "Steel Inventor," Far East.

	Cases
General Rubber Co.	6,889
J. T. Johnstone & Co., Inc.	127
L. Littlejohn & Co., Inc.	4,661
H. Muehlstein & Co., Inc.	*272
H. Muehlstein & Co., Inc.	628
Poel & Kelly, Inc.	865

MARCH 19. By "American Trader," Europe.

	Cases
H. A. Astlett & Co.	56,000 lbs.
Baird Rubber & Trading Co., Inc.	403

MARCH 19. By "Valacia," Europe.

	Cases
H. A. Astlett & Co.	11,200 lbs.
L. Littlejohn & Co.	1,882

MARCH 21. By "Archer," Far East.

	Cases
Vernon Metal & Produce Co., Inc.	499

MARCH 21. By "Maryland," London.

	Cases
H. A. Astlett & Co.	12,880 lbs.
General Rubber Co.	20
J. T. Johnstone & Co., Inc.	560
L. Littlejohn & Co., Inc.	2,888
Meyer & Brown, Inc.	289
Vernon Metal & Produce Co., Inc.	1,322

MARCH 21. By "West Chopaka," Far East.

	Cases
H. A. Astlett & Co.	11,200 lbs.
Poel & Kelly	100

MARCH 22. By "Antonia," London.

	Cases
Poel & Kelly, Inc.	1,546

MARCH 22. By "Archer," Far East.

	Cases
J. T. Johnstone & Co., Inc.	100
L. Littlejohn & Co., Inc.	2,764
Meyer & Brown, Inc.	750
Poel & Kelly, Inc.	100

MARCH 22. By "Barbadian," London.

	Cases
L. Littlejohn & Co., Inc.	*111

MARCH 23. By "Archer," Far East.

	Cases
H. A. Astlett & Co.	33,600 lbs.
Paul Bertuch	465 pkgs.
Hood Rubber Co.	664 pkgs.
H. Muehlstein & Co., Inc.	120

MARCH 23. By "Carmania," Europe.

	Cases
H. A. Astlett & Co.	26,880 lbs.
Meyer & Brown, Inc.	252

MARCH 23. By "City of Salisbury," Far East.

	Cases
General Rubber Co.	590
L. Littlejohn & Co., Inc.	870
Chas. T. Wilson & Co., Inc.	132

MARCH 23. By "Maryland," London.

	Cases
Baird Rubber & Trading Co., Inc.	782
Chas. T. Wilson & Co.	82

MARCH 23. By "Minetic," Far East.

	Cases
Vernon Metal & Produce Co., Inc.	*112

MARCH 23. By "Minnetonka," London.

	Cases
J. T. Johnstone & Co., Inc.	786
L. Littlejohn & Co., Inc.	1,701
Vernon Metal & Produce Co., Inc.	863
Chas. T. Wilson & Co.	233

MARCH 23. By "Slavic Prince," Far East.

	Cases
H. Muehlstein & Co., Inc.	*58
H. Muehlstein & Co., Inc.	560
Poel & Kelly, Inc.	*250

*Arrived at Boston.

MARCH 25. By "Atreus," Far East.

	Cases
J. T. Johnstone & Co., Inc.	50

MARCH 25. By "Bolton Castle," Far East.

	Cases
Baird Rubber & Trading Co., Inc.	200
General Rubber Co.	7,590
J. T. Johnstone & Co., Inc.	115
L. Littlejohn & Co., Inc.	5,473
Meyer & Brown, Inc.	2,161
H. Muehlstein & Co., Inc.	128
Poel & Kelly, Inc.	1,217
Vernon Metal & Produce Co., Inc.	66
Chas. T. Wilson & Co., Inc.	550

MARCH 25. By "Slavic Prince," Singapore.

	Cases
The Fisk Rubber Co.	432
Vernon Metal & Produce Co., Inc.	792

MARCH 26. By "Ansonia," London.

	Cases
J. T. Johnstone & Co., Inc.	700

MARCH 26. By "Jacatra," Far East.

	Cases
J. T. Johnstone & Co., Inc.	51

MARCH 26. By "Mahratta," Far East.

	Cases
H. Muehlstein & Co., Inc.	112
Poel & Kelly, Inc.	413
Chas. T. Wilson & Co., Inc.	385

MARCH 26. By "Mineric," Far East.

	Cases
General Rubber Co.	1,436
Hood Rubber Co.	*403 pkgs.
L. Littlejohn & Co., Inc.	2,750
Meyer & Brown, Inc.	1,174
H. Muehlstein & Co., Inc.	*100
Poel & Kelly, Inc.	1,117

MARCH 26. By "President Hayes," Far East.

	Cases
H. A. Astlett & Co.	11,200 lbs.
Paul Bertuch & Co.	428 pkgs.
Hood Rubber Co.	*248 pkgs.
L. Littlejohn & Co., Inc.	993
Meyer & Brown, Inc.	208
Poel & Kelly, Inc.	1,689
Vernon Metal & Produce Co., Inc.	450
Chas. T. Wilson & Co., Inc.	180

MARCH 26. By "Slavic Prince," Far East.

	Cases
H. A. Astlett & Co.	235,200 lbs.
Baird Rubber & Trading Co., Inc.	2,692
General Rubber Co.	2,522
Hood Rubber Co.	*844 pkgs.
J. T. Johnstone & Co., Inc.	134
L. Littlejohn & Co., Inc.	9,392
Meyer & Brown, Inc.	1,969
Poel & Kelly, Inc.	2,435
Chas. T. Wilson & Co., Inc.	215

MARCH 27. By "Mahratta," Far East.

	Cases
L. Littlejohn & Co., Inc.	1,120
Meyer & Brown, Inc.	80

MARCH 27. By "President Hayes," Far East.

	Cases
Baird Rubber & Trading Co., Inc.	100

MARCH 29. By "London Mariner," Europe.

	Cases
H. A. Astlett & Co.	89,600 lbs.
L. Littlejohn & Co., Inc.	804
Meyer & Brown, Inc.	349

MARCH 29. By "Vasconia," Europe.

	Cases
Meyer & Brown, Inc.	710

MARCH 30. By "London Mariner," Europe.

	Cases
Baird Rubber & Trading Co., Inc.	341

MARCH 30. By "Roseric," Far East.

	Cases
Baird Rubber & Trading Co., Inc.	224
General Rubber Co.	127
L. Littlejohn & Co., Inc.	448
Poel & Kelly, Inc.	280

MARCH 31. By "Aurania," Far East.

	Cases
Poel & Kelly, Inc.	306
Vernon Metal & Produce Co., Inc.	308

MARCH 31. By "Colorado," Far East.

	Cases
H. A. Astlett & Co.	459,200 lbs.
Baird Rubber & Trading Co., Inc.	648
The Fisk Rubber Co.	655
General Rubber Co.	1,821
Hood Rubber Co.	*24 pkgs.
J. T. Johnstone & Co.	656
L. Littlejohn & Co., Inc.	3,048
Meyer & Brown, Inc.	974
H. Muehlstein & Co., Inc.	150
Poel & Kelly, Inc.	6,186
Vernon Metal & Produce Co., Inc.	300

APRIL 1. By "City of Benares," Far East.

	Cases
L. Littlejohn & Co., Inc.	430
Meyer & Brown, Inc.	56
Chas. T. Wilson & Co., Inc.	224

APRIL 1. By "Colorado," Singapore.

	Cases
Chas. T. Wilson & Co., Inc.	430

APRIL 2. By "Bolton Castle," Far East.

	Cases
Poel & Kelly, Inc.	*100

APRIL 2. By "Hofuku Maru," Far East.

	Cases
Baird Rubber & Trading Co., Inc.	528
General Rubber Co.	3,247
L. Littlejohn & Co., Inc.	1,596
Meyer & Brown, Inc.	438
H. Muehlstein & Co., Inc.	135
Poel & Kelly, Inc.	617
Vernon Metal & Produce Co., Inc.	130
Chas. T. Wilson & Co., Inc.	499

APRIL 2. By "Minnekahda," London.

	Cases
J. T. Johnstone & Co., Inc.	566
L. Littlejohn & Co., Inc.	552
Meyer & Brown, Inc.	1,018
Poel & Kelly, Inc.	65
Vernon Metal & Produce Co., Inc.	494

APRIL 3. By "Rochambeau," Europe.

	Cases
H. A. Astlett & Co.	134,400 lbs.

APRIL 3. By Virgilia," London.

	Cases
Chas. T. Wilson & Co., Inc.	80

APRIL 4. By "Independence Hall," Havre.

	Cases
Adolph Hirsch & Co., Inc.	145 bales

APRIL 4. By "Mineric," Far East.

	Cases
H. A. Astlett & Co.	33,600 lbs.

APRIL 4. By "Missouri," London.

	Cases
Hood Rubber Co.	*50 pkgs.

APRIL 4. By "Virgilia," London.

	Cases
L. Littlejohn & Co., Inc.	44
Poel & Kelly, Inc.	7,951

APRIL 5. By "Atreus," Singapore.

	Cases
H. A. Astlett & Co.	398,720 lbs.
Paul Bertuch & Co.	275 pkgs.
General Rubber Co.	2,212
L. Littlejohn & Co., Inc.	5,815
Meyer & Brown, Inc.	2,526
H. Muehlstein & Co., Inc.	393
Poel & Kelly, Inc.	3,913
Vernon Metal & Produce Co., Inc.	254
Chas. T. Wilson & Co., Inc.	758

APRIL 6. By "American Farmer," London.

	Cases
Baird Rubber & Trading Co., Inc.	272

APRIL 6. By "Ansonia," London.

	Cases
Poel & Kelly, Inc.	2,314

APRIL 6. By "Carmania," Europe.

	Cases
Poel & Kelly, Inc.	141

APRIL 6. By "Genoa Maru," Far East.

	Cases
L. Littlejohn & Co., Inc.	350
Vernon Metal & Produce Co., Inc.	56

APRIL 6. By "Jacatra," Far East.

	Cases
H. A. Astlett & Co.	95,200 lbs.
General Rubber Co.	3,861
L. Littlejohn & Co., Inc.	5,690
Meyer & Brown, Inc.	1,177
H. Muehlstein & Co., Inc.	51
Vernon Metal & Produce Co., Inc.	369
Chas. T. Wilson & Co., Inc.	573

APRIL 7. By "Jacatra," Far East.

	Cases
Baird Rubber & Trading Co., Inc.	694

APRIL 10. By Colorado," Far East.

	Cases
Vernon Metal & Produce Co., Inc.	*168

APRIL 11. By "Challenger," Far East.

	Cases
H. A. Astlett & Co.	201,600 lbs.
Baird Rubber & Trading Co., Inc.	1,450
General Rubber Co.	3,184
L. Littlejohn & Co., Inc.	2,872
Meyer & Brown, Inc.	845
Vernon Metal & Produce Co., Inc.	512
Chas. T. Wilson & Co., Inc.	283

APRIL 11. By "Novian," Europe.

	Cases
H. A. Astlett & Co.	20,160 lbs.
L. Littlejohn & Co., Inc.	989

APRIL 12. By "De Grasse," Europe.

	Cases
H. A. Astlett & Co.	89,600 lbs.

APRIL 12. By "Novian," Europe.

	Cases
Chas. T. Wilson & Co., Inc.	137

APRIL 12. By "Pittsburgh," London.

	Cases
L. Littlejohn & Co., Inc.	879

	Cases
APRIL 13. By "Challenger," Far East.	
Hood Rubber Co.	*50
APRIL 13. By "City of Christiania," Far East.	
L. Littlejohn & Co., Inc.	2,599
Vernon Metal & Produce Co., Inc.	112
Chas. T. Wilson & Co., Inc.	280
APRIL 14. By "Clan MacIntyre," Far East.	
L. Littlejohn & Co., Inc.	1,699
Chas. T. Wilson & Co., Inc.	524
APRIL 14. By "The Lambs," Singapore.	
H. A. Astlett & Co.	68,320 lbs.
Baird Rubber & Trading Co., Inc.	897
L. Littlejohn & Co., Inc.	6,096
Vernon Metal & Produce Co., Inc.	162
Chas. T. Wilson & Co., Inc.	631
APRIL 14. By "London Commerce," Europe.	
H. A. Astlett & Co.	112,000 lbs.
L. Littlejohn & Co., Inc.	597
Meyer & Brown, Inc.	84
Vernon Metal & Produce Co., Inc.	255
APRIL 15. By "The Lambs," Singapore.	
Paul Bertuch & Co.	175 pkgs.
General Rubber Co.	889
APRIL 16. By "American Shipper," London.	
Baird Rubber & Trading Co., Inc.	288
APRIL 16. By "City of Bedford," Far East.	
General Rubber Co.	1,321
Meyer & Brown, Inc.	1,629
Vernon Metal & Produce Co., Inc.	712
APRIL 16. By "Clan MacIntyre," Far East.	
Baird Rubber & Trading Co., Inc.	193
General Rubber Co.	112
APRIL 16. By "The Lambs," Singapore.	
Meyer & Brown, Inc.	1,316
APRIL 16. By "Scythia," London.	
Baird Rubber & Trading Co., Inc.	140
APRIL 17. By "Silver Larch," Far East.	
Baird Rubber & Trading Co., Inc.	900
General Rubber Co.	1,929
Meyer & Brown, Inc.	515
Vernon Metal & Produce Co., Inc.	56
APRIL 18. By "City of Bedford," Far East.	
Baird Rubber & Trading Co., Inc.	1,442

Africans

MARCH 23. By "Carmania," Europe.	
L. Littlejohn & Co., Inc.	859
MARCH 25. By "Raifuku Maru," Europe.	
L. Littlejohn & Co., Inc.	620
MARCH 31. By "Aurania," Europe.	
L. Littlejohn & Co., Inc.	152
MARCH 31. By "McKeesport," Europe.	
L. Littlejohn & Co., Inc.	396
Meyer & Brown, Inc.	320
APRIL 4. By "West Chopaka," Europe.	
Hood Rubber Co.	*22
APRIL 5. By "Caronia," Europe.	
L. Littlejohn & Co., Inc.	332

Centrals

MARCH 27. By "Garfield," South America.	
Ultramares Corporation	36 bales
MARCH 28. By "Ecuador," South America.	
Ultramares Corporation	23 bales
APRIL 15. By "Lake Flattery," South America.	
Ultramares Corporation	52 bales

Balata

MARCH 31. By "Alban," Manaös.	
Paul Bertuch & Co.	17
APRIL 1. By "Alban," South America.	
H. A. Astlett & Co.	11,200 lbs.
APRIL 2. By "Matura," Demerara.	
Middleton & Co., Ltd.	10 bales
APRIL 13. By "Prin. Fred. Hendrik," French Guiana.	
Middleton & Co., Ltd.	13 bales

Guayule

	Cases
MARCH 18. By "Railways," Texas.	
Continental Rubber Co. of New York	672
MARCH 20. By "Agivistar," Mexico.	
Continental Rubber Co. of New York	1,792
MARCH 21. By "Railways," Texas.	
Continental Rubber Co. of New York	1,060
MARCH 27. By "Railways," Texas.	
Continental Rubber Co. of New York	1,060
MARCH 30. By "Panuco," Mexico.	
Continental Rubber Co. of New York	560
MARCH 31. By "Railways," Texas.	
Continental Rubber Co. of New York	500
APRIL 1. By "Railways," Texas.	
Continental Rubber Co. of New York	1,120
APRIL 4. By "Nueces," Mexico.	
Continental Rubber Co. of New York	500
APRIL 8. By "Railways," Texas.	
Continental Rubber Co. of New York	672
APRIL 13. By "Railways," Texas.	
Continental Rubber Co. of New York	500

Rubber Latex

MARCH 18. By "Steel Inventor," Far East.	
General Rubber Co.	205,185 lbs.
APRIL 11. By "Challenger," Far East.	
General Rubber So.	190,160 lbs.
APRIL 15. By "The Lambs," Far East.	
General Rubber Co.	214,168 lbs.
APRIL 17. By "Silver Larch," Far East.	
General Rubber Co.	342,128 lbs.

Maniçobas

MARCH 18. By "Thuringia," Hamburg.	
Adolph Hirsch & Co., Inc.	13 bales

*Arrived at Boston.

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

	January, 1925		Ten Months Ended January, 1925 April, 1924-January, 1925	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
Rubber, gutta percha, etc.,				
From United Kingdom	633,766	$195,706	4,039,091	$1,085,126
United States	2,528,315	927,846	20,359,849	5,409,339
Belgium	.....	.....	50,122	11,393
Ceylon	.....	.....	.....	.....
Straits Settlements	44,800	12,714	1,710,633	386,231
Dutch East Indies	.....	.....	78,474	19,855
France	.....	.....	24,449	5,264
Netherlands	.....	.....	.....	.....
Other countries	.....	.....	.....	.....
Totals	3,206,881	$1,136,266	26,262,618	$6,917,208
Rubber powdered and rubber or gutta percha scrap	370,492	18,380	3,181,001	121,648
Rubber recovered	333,092	44,694	2,245,499	226,693
Balata	.....	.....	4,261	3,246
Rubber substitutes	59,283	23,191	598,079	171,824
Totals	3,969,748	$1,222.531	32,291,458	$7,440,619
PARTLY MANUFACTURED				
Hard rubber sheets and rods	8,656	5,443	150,878	73,402
Hard rubber tubes	.....	147	.....	10,179
Rubber thread not covered	9,446	9,034	76,245	80,523
Totals	18,102	$14,624	227,123	$164,104
MANUFACTURED				
Belting	.....	8,276	.....	131,085
Hose	.....	8,557	.....	93,411
Packing	.....	2,768	.....	32,854
Boots and shoes.....*pairs*	19,377	22,978	147,701	151,594
Clothing, including waterproofed	.....	9,984	.....	133,276
Gloves	.....	1,246	.....	12,523
Hot water bottles	.....	1,374	.....	9,162
Tires, solid.....*number*	52	1,881	6,518	57,173
Tires, pneumatic.....*number*	3,122	19,128	44,602	492,065

	January, 1925		Ten Months Ended January, 1925 April, 1924-January, 1925	
	Pounds	Value	Pounds	Value
MANUFACTURED				
Inner tubes	445	461	23,893	56,656
Elastic, round or flat	.....	15,299	.....	199,335
Mats and matting	.....	1,777	.....	16,341
Cement	.....	5,758	.....	41,323
Other rubber manufactures	.....	99,488	.....	1,229,311
Total	.....	$198,975	.....	$2,656,109
Totals, rubber imports	.....	$1,436,130	.....	$10,260,832

Exports of Domestic and Foreign Rubber Goods

	January, 1925		Ten Months Ended January, 1925 April, 1924-January, 1925	
	Produce of Canada Value	Re-exports of Foreign Goods Value	Produce of Canada Value	Re-exports of Foreign Goods Value
UNMANUFACTURED				
Crude and waste rubber	$9,348	.....	$92,473	.....
Totals	$9,348	.....	$92,473	.....
MANUFACTURED				
Belting	25,382	.....	324,998	.....
Canvas shoes with rubber soles	96,567	.....	1,490,842	.....
Boots and shoes	121,064	.....	803,898	.....
Clothing, including waterproofed	1,537	.....	21,280	.....
Hose	23,635	.....	143,632	.....
Tires, casings	673,841	.....	4,695,087	.....
Inner tubes	103,465	.....	765,122	.....
Pneumatic	.....	.....	.....	.....
Solid	17,012	.....	169,636	.....
Vehicle	.....	.....	.....	.....
Other rubber manufactures	26,306	$3,160	286,979	$116,211
Totals	$1,088,749	$3,160	$8,701,474	$116,211
Totals, rubber exports	$1,098,097	$3,160	$8,793,947	$116,211

CANADA'S TIRE EXPORTS INCREASE

The development of Canada's tire industry in recent years is indicated by the following figures: total tire exports, 1921, $2,466,718; 1922, $4,459,262; 1923, $6,330,419; and 1924, $6,489,939. The leading market for these tires was the United Kingdom, which took in 1921 goods valued at $1,100,889; 1922, $1,111,272; 1923, $1,539,456; and 1924, $1,504,360. Other important customers were: New Zealand, taking in 1921 to the value of $83,252; 1922, $418,762; 1923, $735,293; and 1924, $927,114; and British Africa, 1921, $109,971; 1922, $260,995; 1923, $296,720; and 1924, $629,205. Other countries which also represented rapidly developing markets were Australia, Argentina, and Japan.

DURING THE PAST YEAR AMERICAN EXPORTS OF RUBBER WATER bottles and fountain syringes amounted to $197,109, the largest shipment of the year being in August, at $42,580.

INDIA RUBBER WORLD
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